MANUAL

BEGHELLI POWER LINE CARRIER CENTRALTEST® SYSTEM

Intelligent system with self-contained luminaires

POWER LINE CARRIER EMERGENCY LIGHTING SYSTEM
WITH CENTRALISED SELF-TESTING CAPABILITY

Beghelli

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What is the Power Line Carrier CentralTest system?

The Power Line Carrier CentralTest (CTOC) system is a centralised emergency lighting system comprising a control unit and a variable number of luminaires. Communication between the Control Unit and luminaires takes place via a normal 220 V power line, hence there is no need for a dedicated data line.

The Control Unit periodically runs function and duration tests on all the luminaires making up the system to check that they are working correctly. If an error occurs, the Control Unit will be able to identify both which luminaire is responsible and the type of fault. Automatic duration tests can be run separately on the odd- and even-numbered luminaires in the system so as to avoid draining the batteries of all emergency lighting fixtures at the same time.

Start-up of a Power Line Carrier CentralTest system is especially simple and fast: once all of the luminaires have been fitted in place, the user need only launch the automatic recognition procedure from the Control Unit.

The basic structure of a Power Line Carrier CentralTest system can extend for a considerable distance because, besides performing an emergency lighting function, the luminaires can also act as repeaters of messages between the Control Unit and the most remote devices in the system.

A Power Line Carrier CentralTest system can be remotely controlled and integrated with other control systems.

Control Unit

The main task of a Power Line Carrier CentralTest (CTOC) Control Unit is to run periodic automatic function and duration tests on the luminaires making up the system and record the results. If an error occurs it will indicate which devices are responsible and the type of fault detected.

The Control Unit also offers several auxiliary functions, such as allowing the user to temporarily disable the luminaire emergency function or switch on the luminaires in the override mode: these functions are useful above all during system maintenance.

All functions may be carried out on the system as a whole, groups of devices or a single device. The Control Unit features a keyboard for entering commands and a liquid crystal display which, along with the local printer, enables the user to view the system status and results of the tests performed.

Luminaires

The luminaires are of the self-contained type and will switch on in an emergency regardless of whether a breakdown occurs in the Control Unit or data transmission system. The manufacturer assigns a 6-digit identification code (ID) to each luminaire to distinguish it from all others. This code is written in the memory of the luminaire and shown on a label affixed externally.
At the time the connections are made, each lamp will be assigned a zone number and a sequential number identifying its position inside the zone. The concept of “zones” enables the user to group several luminaires together and selectively run the available function and duration tests.
In a CTOC system each luminaire can thus be located either via its 6-digit factory identification code or the zone/number combination assigned to it during the connection phase. The CTOC system can manage up to 700 luminaires which may be divided in up to 255 distinct zones.

Method of data transmission between control unit and luminaires

Communication between the Control Unit and luminaires takes place via the transmission of digital signals directly over the 230 V power line. Thus there is no need for a dedicated data transmission line. The Control Unit periodically sends messages across the power network to all the luminaires connected to the system, where necessary using some luminaires as communication bridges to reach other more remote ones.

INSTALLATION OF A POWER LINE CARRIER CENTRALTEST (CTOC) SYSTEM

The procedure for installing a Power Line Carrier CentralTest system consists of 4 stages:
1 DEFINITION OF A LIGHTING DESIGN PROJECT
2 INSTALLATION OF DEVICES
3 LOGICAL DIVISION OF THE SYSTEM
4 SYSTEM CONFIGURATION

Definition of a lighting design project

Using standard functional criteria, assign a location to each luminaire within the system and record its position on the layout map so as to have an overall picture of the emergency lighting system.

Check on the electronic system

Before installing a CentralTest CTOC system it indispensable to refer to the “CentralTest CTOC system installation guide”. It is especially important to analyse and know the power distribution layout of the whole system. The purpose of such an analysis is to identify any potential problems of communication between different parts of the system and take preventive measures accordingly. In the case of three-phase power supply systems, where there is a need to favour transmission from one phase to another, it is possible to include simple repeater circuits that amplify and couple the high frequency signal at the main power distribution panel boards.

Should sources of noise be present on the line, it is possible instead to install de-coupling filters to limit the propagation of noise along the power line.

Logical division of the system

Establish a logical numbering of the luminaires by assigning each fixture a zone number and a sequential number within the zone - according to functional criteria or the layout of the system - and mark down the numbers on the system map so as to have an overall picture of the division into zones.
For example, assign the same zone number to one or more luminaires installed in rooms sharing similar operational requirements with respect to the performance of tests and inhibition of the emergency function or are located on the same floor of the building. The system can be divided into 255 different zones and any given zone can be assigned up to 255 luminaires. Luminaires assigned the same zone number must necessarily be distinguished by different sequential numbers.

It is recommended to use the following coding to identify the luminaires :

Z 01	L 01	for luminaire	1	of Zone	1
Z 01	L 02	for luminaire	2	of Zone	1
“	“	“		“	“
Z n	L m	for luminaire	m	of Zone	n

At the time the connections are made, each luminaire can be associated with the Zone/Number combination thus assigned.

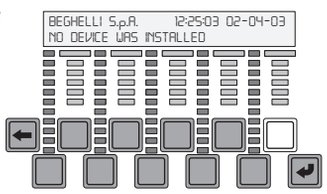
System configuration

Thanks to the AUTOMATIC configuration procedure, once the user has specified the total number of devices to be configured the Control Unit will conduct a search for all the luminaires specified, automatically assigning to each of them a zone, a number identifying their position within the zone and the factory-set length of the duration test. At any time thereafter you can use the program editing functions to assign the luminaires thus configured to a different zone or change the length of the duration test (see instructions for moving a luminaire (redefinition of zones) and changing the length of the duration test).
On fitting the luminaires permanently into place, it is a good idea to mark down the 6-digit identification number on the system layout map so as to document the exact position of each luminaire within the system itself.
The AUTOMATIC configuration has the purpose of recording all of the luminaires so that they may be submitted to automatic scheduled testing procedures.
The Control Unit cannot control luminaires unless they have been configured beforehand.
The configuration procedure specifically has the aim of:
- enabling the Control Unit to acquire the factory codes of all the luminaires making up the system so that it can access them.
- memorising a single System Code for all of the luminaires so that they will be identified as belonging exclusively to that particular system.
- assigning each luminaire a zone number and a number defining its position within the zone, based on how the user has chosen to divide the system.

At the end of the AUTOMATIC configuration procedure, the Control Unit will able to access each luminaire belonging to the system either via its six-digit factory identification code (ID) or via the zone/number combination assigned at this stage. Luminaires belonging to the same zone will necessarily have different sequential numbers.
IMPORTANT: in order for a luminaire to be configured by a Control Unit, it must have its programming cleared. All luminaires leave the factory in a cleared status. However, where necessary, this status can be restored using the clearing procedure performed by the Control Unit (see instructions for clearing a luminaire).
If by the end of the procedure the control unit has not succeeded in configuring all of the devices specified, it will continue to run a search until it has found them all or until the user explicitly requests to interrupt the procedure by pressing any key.

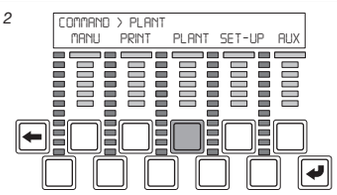
To access the CONFIGURATION procedure:

Fig. 1



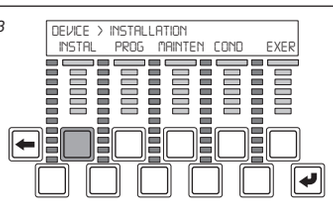
- From the main screen press any key except the one at the top right (fig. 1).
- *The 5 main menu headings will be displayed (fig. 2).*

Fig. 2



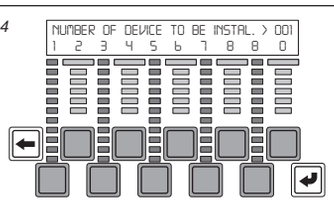
- Press the "PLANT" key (fig. 2).
- Press ENTER ↵ to confirm.
- *The "DEVICE" menu will be displayed (fig. 3).*

Fig. 3



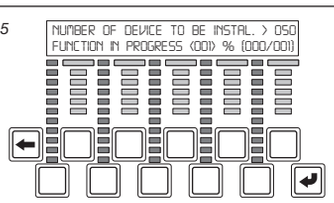
- Press the INSTAL key (fig. 3).
- Press ENTER ↵ to confirm.
- *The "INSTALLATION" menu will be displayed (fig. 4).*

Fig. 4



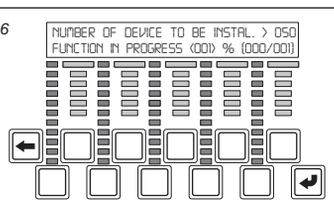
- Specify the number (fig. 4). 1 2 3 456789 0
- Press ENTER ↵ to launch the configuration procedure.

Fig. 5



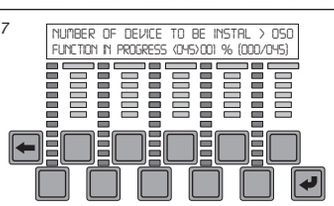
The control unit will display the number of devices configured thus far along with a progress index (fig. 5).

Fig. 6



The end of the procedure will be signalled by a specific message and an indication of the total number of devices configured (fig. 6).

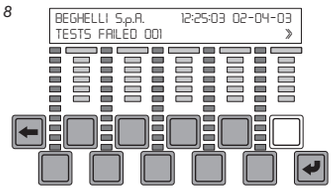
Fig. 7



If by the end of the procedure the control unit has not succeeded in configuring all of the devices specified, it will remain on the screen currently displayed and continue to run a search until it has found them all or until the user explicitly requests to interrupt the procedure by pressing any key (fig. 7). The end of the procedure may not be immediate because the control unit might have to complete the search attempt underway.

At this stage, besides the number of devices configured thus far and a progress index, the control unit will also display the number of times the procedure has been carried out (fig. 7).

Fig. 8



Keyboard and display

The Control Unit features a 2 line x 40 character backlit liquid crystal display and 12 keys for selecting, programming and executing all system functions. The display lights up when any of the keys is pressed and goes off automatically in the event of an emergency, while the printer is working

or 60 seconds after the pressing of the last key.

All the keys, with the exception of BACKSPACE » and ENTER ↵ (fig. 8), have a function that will vary according to the current display context. All Control Unit functions are grouped into five main menus:

1 "MANUAL": it contains the functions associated with manual operation of the system (immediate request for a function or duration test, system shutdown, clearing of luminaire errors from the memory).

2 "PRINTER": it contains the functions relating to the printout of system configuration and status data.

3 "DEVICE": it contains the functions relating to system installation, programming and maintenance as well as checks on the system status.

4 SET-UP: it contains the functions for setting the date, time, language and automatic printout parameters.

5 "AUX": it contains the functions for programming the two serial ports for remote control of the system from a personal computer (via modem or a direct serial connection), or via a TeleIO device.

To access the main menus from the main screen just press any key except the one at the top right (fig. 8).

Irrespective of where you are in a menu, pressing the BACKSPACE ← key will always take you back to the previous menu level or cancel the operation in progress. The Control Unit has a security feature consisting in a key-operated switch located on the rear which can be used to disable the keyboard (KEY OFF position) while the Control Unit remains operational.
While automatic tests are being run the keyboard will be automatically disabled.

MAIN SCREEN

Automatic tests will be run on CTOC luminaires only if at the scheduled time of testing the Control Unit is standing by with the MAIN SCREEN displayed (fig. 8).
To ensure that the system operates correctly, therefore, the Control Unit will automatically switch back to the main screen on the completion of any system procedure or 60 seconds after the pressing of the last key.
The Control Unit keeps the current system status monitored at all times and will signal any operating faults or errors by displaying warning messages on the main screen (see warning messages). Whenever the '>>' symbol appears next to a displayed warning message, it means that there are further indications regarding the system status, which may be viewed by pressing the key underneath (fig. 8).
Alongside such indications of a general character, the Control Unit includes several specific functions for carrying out a detailed analysis of the system status (see Check on System Status).

WARNING MESSAGES

The Control Unit keeps the user informed at all time about the current system status by displaying warning messages on the main menu:

1 "POWER FAIL": this message warns that the Control Unit has been cut off from the power supply, either because a blackout has occurred or the Control Unit has been unplugged by mistake.

2 "FUNCTIONAL TEST IN PROGRESS": this message will appear during execution of an automatic function test.

3 "AUTONOMY TEST IN PROGRESS": this message will appear during execution of an automatic duration test.

4 "CALL REQUEST": this message will appear after a call request has been generated and will continue to be displayed until the call has been correctly put through or after a given number of failed attempts. A call request can be activated only if the Control Unit has been enabled for connection to a Personal Computer (see instructions for programming a connection between the Control Unit and personal computer via a direct connection or via modem) and only if one or more of the following events has occurred: "NO DEVICES WAS INSTALLED, DEVICE NOT REACHABLE, COMMUNICATION ERRORS, FAILED TEST, ACTIVE RECALL"

5 "DEVICE NOT REACHABLE": this message will appear if the Control Unit cannot identify a path for reaching a luminaire within the system, not even using other devices as a communication bridge. Alongside the unreachable node warning, the number of the devices for which an error has been detected will also be shown. To find out which devices have triggered the message, access the error check function (see display of errors). An unreachable node situation can arise following:
- connection of a device using the MANUAL procedure, where the final installation site, generally distinct from the point of connection, lies beyond the Control Unit's range of visibility. (The AUTOMATIC connection procedure assumes all luminaires to be already in place at the time the connections are made: an unreachable node error cannot be generated in this case because the devices not visible by the Control Unit are not even connected).
- removal of a device from the system that was used as a bridge for communication between the Control Unit and another device.
The message will disappear only when conditions of visibility have been created between the Control Unit and any unreachable devices.

6 "FUNCTIONAL TEST SUSPENDED": this message will appear after an automatic function test has been deferred because not all the batteries of the luminaires within the system are fully charged. It will disappear following the execution of the next automatic function test.

7 "AUTONOMY TEST SUSPENDED": this message will appear after an automatic duration test has been deferred because not all the batteries of the luminaires within the system are fully charged. It will disappear following the execution of the next automatic duration test.

8 "ERROR IN AUX CN2/CN3": this message will appear if the programmed devices connected via the auxiliary ports, MODEM or TeleIO, fail to respond. In such a case check whether the devices have been correctly connected to the auxiliary ports and are switched on. If the error persists, repeat the programming procedure on the auxiliary ports after first erasing the currently specified programming parameters (see auxiliary ports).

9 "COMMUNICATION ERRORS": this message will appear if the Control Unit fails to communicate with a luminaire for over 48 hours. Alongside the warning, the number of luminaires for which an error has been detected will also be shown. To find out which devices have triggered the message, access the error check function (see display of errors).

10 "FAILED TEST": this message is triggered by the detection of a luminaire battery or tube fault. Alongside the warning of a failed test, the number of devices involved will also be shown. To find out the cause and identify which luminaires have triggered the warning, access the error check function (see display of errors).

11 "NO DEVICES WAS INSTALLED": this message will appear if no device is connected to the Control Unit, hence either before the system has been connected or after the Control Unit has been reset. It will disappear once at least one luminaire is connected to the Control Unit.

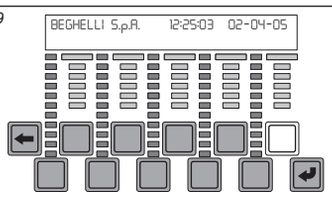
12 "ACTIVE RECALL": this message will appear at the date and time of a call request (programmed from a Personal Computer), and will remain until the call is made.

After the connections have been made between the Control Unit and luminaires (see system connection), it is necessary and sufficient to carry out a few simple programming operations to render the CTOC system fully operational. It is advisable to carry out the required programming steps in the sequence indicated.

LANGUAGE SELECTION

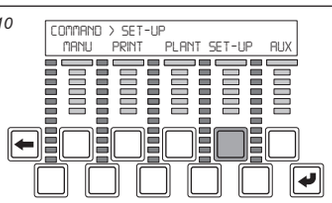
The Control Unit allows the user to selection one of the following languages:
- ITALIAN (factory default setting)
- ENGLISH
- FRENCH
- GERMAN

Fig. 9



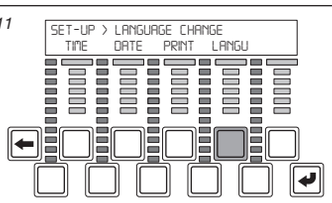
- From the main screen press any key except the one at the top right (fig. 9).
- *The 5 main menu headings will be displayed (fig. 10).*

Fig. 10



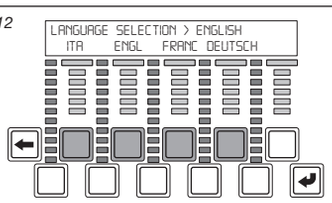
- Press the SET_UP key (fig. 10).
- Press ENTER ↵ to confirm
- *The SET_UP menu will be displayed (fig. 11).*

Fig. 11



- Press the "LANGUAGE" key (fig. 11).
- Press ENTER ↵ to confirm
- *The language menu will be displayed (fig. 12).*

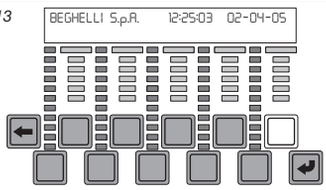
Fig. 12



- Press the key corresponding to the desired language (fig. 12).
- Press ENTER ↵ to confirm
- The Control Unit will automatically go back to the SET_UP menu (fig. 11).
- Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key.

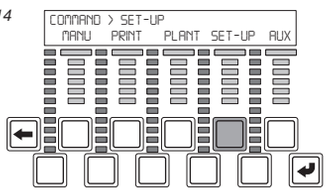
SETTING THE CLOCK

Fig. 13



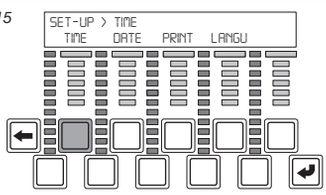
- From the main screen press any key except the one at the top right (fig. 13).
- *The 5 main menu headings will be displayed (fig. 14).*

Fig. 14



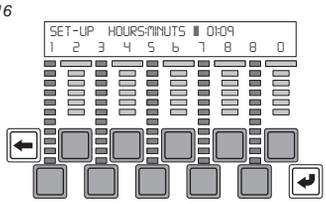
- Press the SET_UP key (fig. 14). .
- Press ENTER ↵ to confirm
- *The SET_UP menu will be displayed (fig. 15).*

Fig. 15



- Press the "TIME" key (fig. 15).
- Press ENTER ↵ to confirm
- *This will take you to the clock setting screen: the first hour digit will flash (fig. 16).*

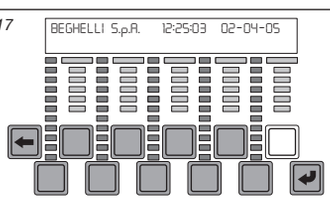
Fig. 16



- This will take you to the clock setting screen: the first hour digit will flash (fig. 16).
- *The cursor will move automatically to the next digit to be entered.*
- Press ENTER ↵ to confirm the displayed time setting
- *The Control Unit will automatically go back to the SET_UP menu (fig. 15).*
- Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key.

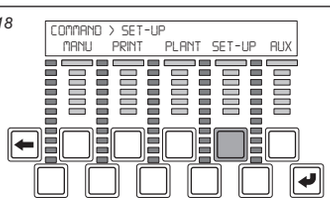
SETTING THE DATE

Fig. 17



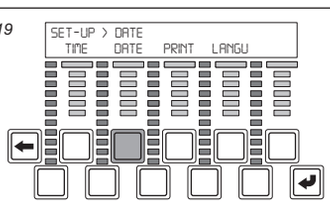
- From the main screen press any key except the one at the top right (fig. 17).
- *The 5 main menu headings will be displayed (fig. 18).*

Fig. 18



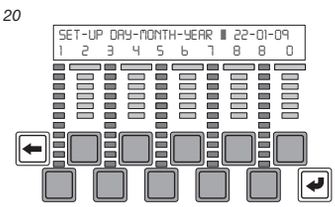
- Press the SET_UP key (fig. 18).
- Press ENTER ↵ to confirm
- The SET_UP menu will be displayed (fig. 19).

Fig. 19



- Press the "DATE" key (fig. 19).
- Press ENTER ↵ to confirm
- *This will take you to the date setting screen: the first digit of the date will flash (fig. 20):*

Fig. 20



- Set the exact date by entering in sequence the 6 digits making it up.
- *The cursor will move automatically to the next digit to be entered.*
- Press ENTER ↵ to confirm the displayed date.
- *The Control Unit will automatically go back to the SET_UP menu (fig. 19).*
- Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key

RUNNING AUTOMATIC TESTS

The CTOC Control Unit periodically runs function and duration tests on all the luminaires making up the system at the scheduled time and frequency specified by the user. It moreover assures subsequent completion of tests on any luminaires that did not undergo testing at the scheduled time. If at the scheduled time the Control Unit is unable to run a test on all of the luminaires, it will print out a partial test report, warning that the test is not yet complete, and memorise which luminaires still have to be tested. As soon as possible, the control unit will run the test on the remaining luminaires. When all of the remaining luminaires have been tested, the control unit will print out a complete test report for all of the luminaires tested - not just the ones previously left out - and inform the user that the test is complete

Example. system luminaires= 165

BEGHELLI S.p.A
12-01-99 15:22
FUNCTIONAL TEST REPORT
165 DEVICES TESTED
001 ERRORS
ZONE 001 N 156 ID 123456
LAMP
TEST IN EXECUTION

BEGHELLI S.p.A
12-01-99 22:10
FUNCTIONAL TEST REPORT
165 DEVICES TESTED
002 ERRORS
ZONE 001 N 156 ID 123456
LAMP
ZONE 002 N 001 ID 111112
LAMP
TEST COMPLETED

The manual test completion phase can terminate without all pending tests having been run, in one of following cases:

1. all of the luminaires with tests still pending have clearly been identified as having communication faults (at least 48 hours have elapsed since the previous communication with the luminaires).
2. the time limit for completing the test has expired (timeout); it is possible, in fact, to specify a maximum number of days beyond which the test must be considered in any case completed (see instructions for programming the completion of automatic tests).
3. it is time for the next automatic test to be run.

In each of these cases the Control Unit will override the completion procedure, causing the test to come to an end. It will print out the overall test results, identifying any luminaires that have not undergone the test.

Example. system luminaires= 165

BEGHELLI S.p.A
12-01-99 15:22
FUNCTIONAL TEST REPORT
165 DEVICES TESTED
000 ERRORS
TEST IN EXECUTION

BEGHELLI S.p.A
14-01-99 15:20
FUNCTIONAL TEST REPORT
165 DEVICES TESTED
001 ERRORS
ZONE 002 N 001 ID 111112
NOT TESTED
TEST COMPLETED

A user request to run a manual test will likewise immediately suspend the completion procedure relating to a pending automatic test; in this case, however, the overall test outcome will not be printed and the test will thus remain incomplete.

The Control Unit allows the user to specify a maximum number of days for completing automatic tests before triggering a timeout, and also to set time windows so that tests will be run only at certain times of the day (see instructions for programming the completion of automatic tests). These parameters are programmed separately for function and duration tests and apply only for the completion of automatic tests.

While an automatic test is being run the keyboard will be disabled and the Control Unit will display the main screen with indications as to the operations in progress and the overall system status. The automatic test completion phase, on the other hand, is totally transparent and enables normal use of the Control Unit.

Automatic duration tests can be performed separately on the odd- and even-numbered luminaires in the system to avoid draining the batteries of all the emergency lighting fixtures at the same time. In this case the user must specify the time lag (max. 7 days) between the execution of tests on the two groups of luminaires (see instructions for programming automatic tests). Whether a luminaire belongs to one or the other group, odd or even, depends on the sequential number assigned to each luminaire within its respective zone during the system connection phase. The Control Unit will separately perform the automatic duration test on the two groups of luminaires according to the programmed time lag, and for each group it will print out a partial test report. Only after the test has been run on both groups of luminaires will the Control Unit declare the test to be completed.

Example. system luminaires= 165

BEGHELLI S.p.A
12-01-99 15:22
AUTONOMY TEST REPORT
EVEN DEVICES TEST
82 DEVICES TESTED
001 ERRORS
ZONE 001 N 156 ID 123456
LAMP
EVEN DEVICES TEST
COMPLETED

BEGHELLI S.p.A
13-01-99 15:25
AUTONOMY TEST REPORT
ODD DEVICES TEST
83 DEVICES TESTED
000 ERRORS
ODD DEVICES TEST
COMPLETED
TEST COMPLETED

In the interval between the duration tests performed on odd- and even-numbered luminaires, the execution of automatic function tests will be suspended.

PROGRAMMING AUTOMATIC TESTS

The Control Unit periodically and automatically runs FUNCTION AND DURATION TESTS on the luminaires in the system, checking that they switch on and, in the case of the duration test, that the batteries operate for the full rated duration. When programming the frequency and time of day for running tests, you should take into account the characteristics of the individual system plus some more general considerations:

1. since function and duration tests cause the luminaires to switch on, it is a good idea to schedule them at times when the rooms served by the CTOC emergency lighting system will be mostly or completely unoccupied. For example, in a cinema it may be convenient to carry out the tests on the day the cinema is closed, in an office during the night and in a hotel during the middle of the day.
2. since duration tests cause the batteries to discharge completely, it is a good idea to schedule them at the times furthest from when emergency lighting is likely to be needed, so as to leave sufficient time for recharging. In general, therefore, they should be scheduled during the early hours of the day. In any case, to avoid draining the batteries of all emergency luminaires simultaneously, the automatic duration tests can be scheduled to run separately on the odd- and even-numbered luminaires in the system.
3. since each switching on operation causes a small degree of stress on the fluorescent bulb and the battery, it is advisable not to schedule tests too frequently.
4. under current regulations, the efficiency and duration of the safety system must be tested at least once every six months.
5. to avoid inconvenient overlapping between tests, it is a good idea to schedule function and duration tests on different days

The factory programming provides for function tests to be performed every 28 days starting from 12.00 noon on 01/01/1996, thus always on Tuesday, and duration tests to be performed every 26 weeks starting from 12.00 noon on 04/01/1996, thus always on a Saturday.

IMPORTANT: The Control Unit will run automatic function and duration tests at the scheduled times only if:

- **it is currently displaying the MAIN SCREEN.**
- **during the previous 12 hours no cause of emergency has occurred and no supplementary function or duration test has been requested. The purpose of this restriction is to ensure that the tests will be performed when the batteries are fully charged.**

If an automatic test is deferred for any reason the Control Unit will display a message accordingly on the main screen. A deferred automatic test will be run the following day in the case of a function test or the following week in the case of a duration test or function test with a scheduled frequency that is a multiple of seven days.

Function tests last one minute.

How long a duration test lasts will depend, for each luminaire, on the time interval specified during the connection phase (30, 60, 90, 120, 150, 180, 210, 240 minutes).

Automatic tests cannot be interrupted.
Automatic duration tests can be performed separately on the odd- and even-numbered luminaires in the system to avoid draining the batteries of all the emergency lighting fixtures at the same time. In this case the user must specify the time lag (max. 7 days) between the execution of tests on the two groups of luminaires. Whether a luminaire belongs to one or the other group, odd or even, depends on the sequential number assigned to each luminaire within its respective zone during the system connection phase.

To access the AUTOMATIC TESTS PROGRAMMING menu:

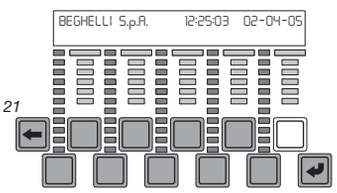


Fig. 21

- From the main screen press any key except the one at the top right (fig. 21).
- *The 5 main menu headings will be displayed (fig. 22).*

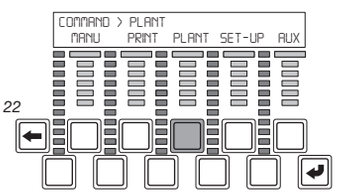


Fig. 22

- Press the "PLANT" key (fig. 22).
- Press ENTER ↵ to confirm.
- *The "DEVICE" menu will be displayed (fig. 23).*

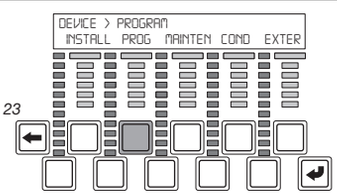


Fig. 23

- Press the PROG key (fig. 23).
- Press ENTER ↵ to confirm.
- *The "PROGRAMMATION" menu will be displayed (fig. 24).*

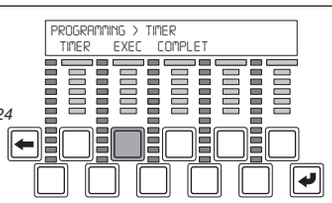


Fig. 24

- Press the TIMER key (fig. 24).
- Press ENTER ↵ to confirm.
- *The "PROGRAMMING TIMER TEST" menu will appear on the display (fig. 25).*

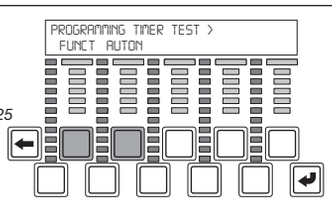
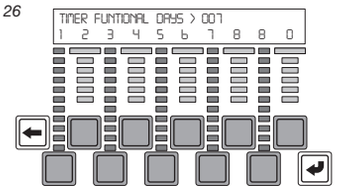


Fig. 25

- Press the "FUNCT" key to program the execution of function tests or the "AUTON" key to program duration tests (fig. 25).
- Press ENTER↵ to launch the programming procedure for the type of test selected.

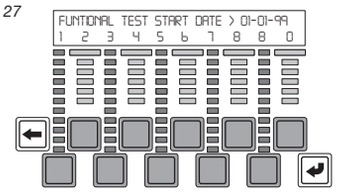
Programming of Automatic Function Tests

Fig. 26



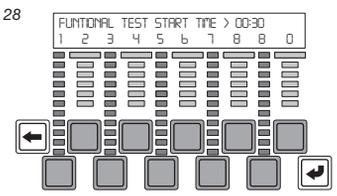
- Specify, in days, the frequency for running function tests (fig. 26).
- Press ENTER ↵ to confirm.

Fig. 27



- Specify the starting date to be used as reference in calculating subsequent test dates (fig. 27).
- *The cursor will move automatically to the next digit to be entered.*
- Press ENTER ↵ to confirm or the BACKSPACE ← key to go back to the screen for specifying the test frequency

Fig. 28

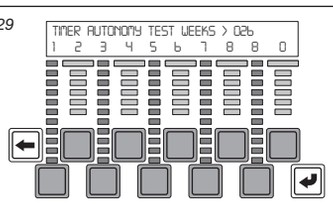


- Specify the time at which automatic function tests will be run (fig. 28).
- *The cursor will move automatically to the next digit to be entered.*
- Press ENTER ↵ to confirm or the BACKSPACE ← key to go back to the screen for specifying the reference date.
- *The control unit will automatically return to the "Programming Timer Test" Menu (fig. 25).*

•Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key

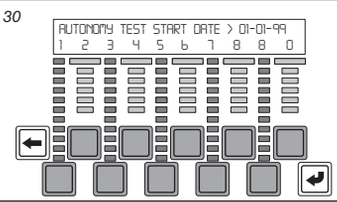
Programming Automatic Duration Tests

Fig. 29



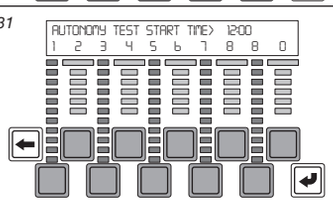
- Specify, in weeks, the frequency for running duration tests (fig. 29).
- Press ENTER ↵ to confirm.

Fig. 30



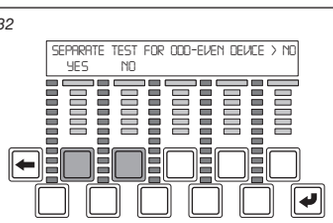
- Specify the starting date to be used as reference in calculating subsequent test dates (fig. 30).
- *The cursor will move automatically to the next digit to be entered.*
- Press ENTER ↵ to confirm or the BACKSPACE ← key to go back to the screen for specifying the test frequency.

Fig. 31



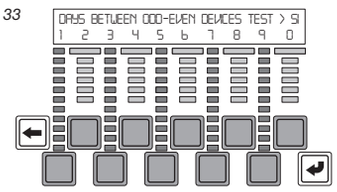
- Specify the time at which automatic duration tests will be run (fig. 31).
- *The cursor will move automatically to the next digit to be entered.*
- Press ENTER ↵ to confirm or the BACKSPACE ← key to go back to the screen for specifying the reference date.
- The Control Unit allows automatic duration tests to be performed separately on the odd- and even-numbered luminaires in the system (fig. 32).

Fig. 32



- Press "YES" to have automatic duration tests run separately on odd- and even-numbered luminaires or press NO to have automatic duration tests run simultaneously on all luminaires belonging to the system.
- Press ENTER ↵ to confirm. Where it has been specified that automatic duration tests must be run separately on odd- and even-numbered luminaires the Control Unit will also allow you to specify the time lag between the tests on the two groups of luminaires (fig. 33).

Fig. 33



- Specify the time lag, in number of days, between the execution of automatic duration tests on odd- and even-numbered luminaires (max. 7 days) (fig. 33).
- Press ENTER ↵ to confirm.
- *The control unit will automatically return to the "Programming Timer Test" Menu (fig. 25).*
- Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key.

To check the programming choices made, request a printout of the "DEVICE" programming (see printout of programming parameters).

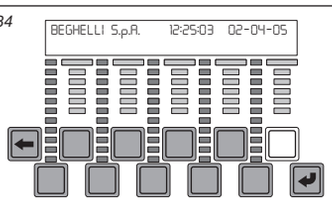
PROGRAMMING THE COMPLETION OF AUTOMATIC TESTS

The Control Unit allows the user to specify time windows for the completion of automatic tests - so that any pending test will be performed only at certain times of the day - and a maximum number days for completing the test, beyond which the test will in any case be treated as if completed. This programming applies solely for the completion of automatic tests and the parameters are programmed separately for function and duration tests.

To program time windows it is sufficient to specify the starting and ending time of the allowed interval. The maximum number of days for completing a test may range anywhere from 1 to 255. The default factory programming provides for the automatic test completion procedure to be always enabled, without time limits.

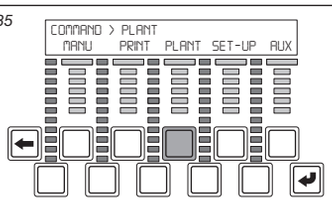
If there is no real need to place restrictions on the completion of automatic tests, it is recommended to maintain the factory programming.

Fig. 34



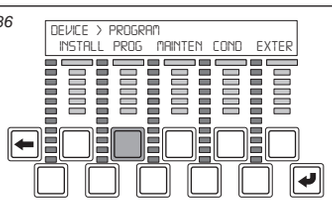
- From the main screen press any key except the one at the top right (fig. 34).
- *The 5 main menu headings will be displayed (fig. 35).*

Fig. 35



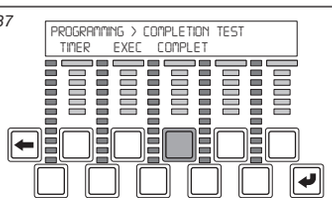
- Press the "PLANT" key (fig. 35).
- Press ENTER ↵ to confirm.
- *The "DEVICE" menu will be displayed (fig. 36).*

Fig. 36



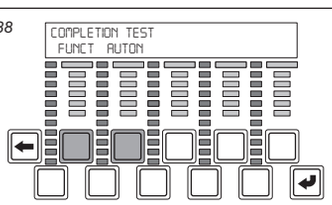
- Press the PROG key (fig. 36).
- Press ENTER ↵ to confirm.
- *The "PROGRAMMATION" menu will be displayed (fig. 37).*

Fig. 37



- Press the COMPLET key (fig. 37).
- Press ENTER ↵ to confirm.
- *The "COMPLETATION TEST" menu will be displayed (fig. 38).*

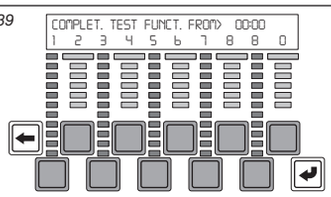
Fig. 38



- Press the "FUNCT" key to program the completion of function tests or the "AUTON" key to program the completion of duration tests (fig. 38).
- Press ENTER ↵ to launch the procedure for programming completion of the test selected

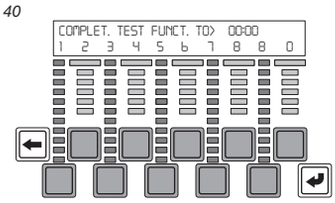
Programming the Completion of Automatic Function Tests

Fig. 39



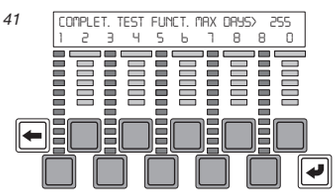
- Specify the starting time of the interval during which the completion of automatic function tests will be enabled (fig. 39).
- *The cursor will move automatically to the next digit to be entered.*
- Press ENTER ↵ to confirm.

Fig. 40



- Specify the end time of the interval during which the completion of automatic function tests will be enabled (fig. 40). If the end time coincides with the starting time, the test completion procedure.
- Will be always enabled
- *The cursor will move automatically to the next digit to be entered.*
- Press ENTER ↵ to confirm or BACKSPACE ← to go back to the screen for programming the starting time of the interval.

Fig. 41

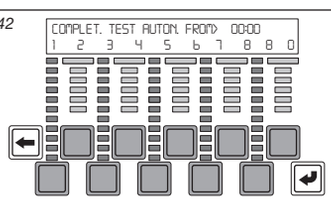


- Specify the maximum number of days allowed for completing automatic function tests (fig. 41).
- Press ENTER ↵ to confirm or BACKSPACE ← to go back to the screen for programming the end time of the interval.
- *The Control Unit will automatically go back to the "Completation Test" Menu (fig. 38).*

- Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key.

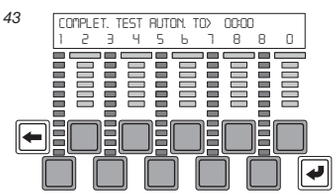
Programming the Completion of Automatic Duration Tests

Fig. 42



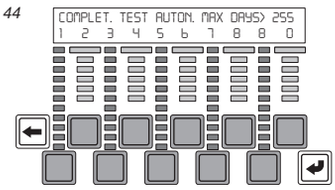
- Specify the starting time of the interval during which the completion of automatic duration tests will be enabled (fig. 42).
- *The cursor will move automatically to the next digit to be entered.*
- Press ENTER ↵ to confirm.

Fig. 43



- Specify the end time of the interval during which the completion of automatic duration tests will be enabled (fig. 43). If the end time coincides with the starting time, the test completion procedure will always be enabled.
- *The cursor will move automatically to the next digit to be entered.*
- Press ENTER ↵ to confirm or BACKSPACE ← to go back to the screen for programming the starting time of the interval.

Fig. 44



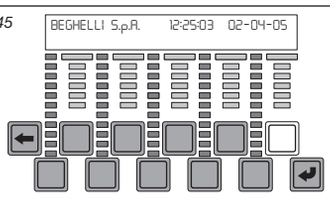
- Specify the maximum number of days allowed for completing automatic duration tests (fig. 44).
- Press ENTER ↵ to confirm or BACKSPACE ← to go back to the screen for programming the end time of the interval.
- *The Control Unit will automatically go back to the "Completation Test" Menu (fig. 38).*

- Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key.

TEST ENABLING /DISABLING BY ZONES

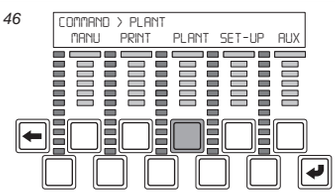
From the Control Unit the user can disable the execution of function and duration tests in specific zones within the system and re-enable them at any later time. This option may prove useful when a certain zone within the system is being used for special purposes which make it necessary to temporarily suspend the execution of tests at the scheduled times.
The disabling of the automatic test function within a given zone of the system will remain in effect until the user re-enables the function.
Disabling the test function in a given zone will preclude both automatic and manual tests. All zones are enabled to begin with.

Fig. 45



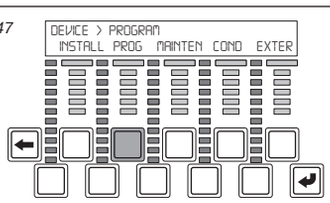
- From the main screen press any key except the one at the top right (fig. 45).
- *The 5 main menu headings will be displayed (fig. 46).*

Fig. 46



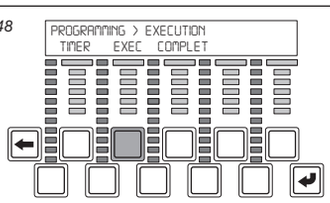
- Press the "PLANT" key (fig. 46).
- Press ENTER ↵ to confirm.
- *The "DEVICE" menu will be displayed (fig. 47).*

Fig. 47



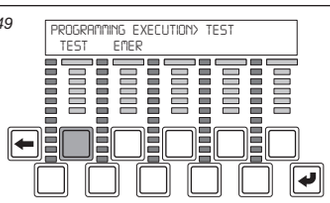
- Press the PROG key (fig. 47).
- Press ENTER ↵ to confirm.
- *The "PROGRAMMATION" menu will be displayed (fig. 48).*

Fig. 48



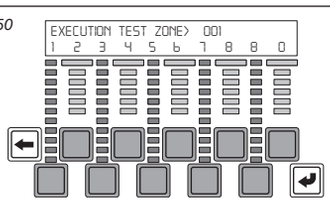
- Press the "EXEC" key (fig. 48).
- Press ENTER ↵ to confirm.
- *The "EXECUTION" menu will be displayed (fig. 49).*

Fig. 49



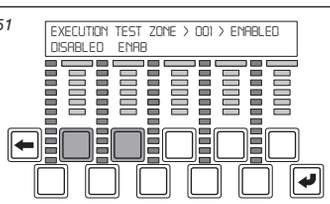
- Press the TEST key to define the domain for performing manual and automatic tests (fig. 49).
- Press ENTER ↵ to confirm.

Fig. 50



- Specify the desired zone (fig. 50).
- Press ENTER ↵ to confirm.

Fig. 51



- Press "DISABLED" to disable the performance of tests in the zone specified or "ENAB" to enable the tests (fig. 51).
- Press ENTER ↵ to confirm.

The Control Unit will automatically go back to the start of the procedure so that you can enable/disable tests in other zones within the system (fig. 50).

ENABLING/DISABLING OF EMERGENCY FUNCTION BY ZONES

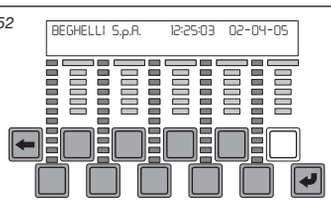
From the Control Unit the user can temporarily disable the emergency function in certain zones of the system.

This option may prove useful during maintenance work, when it is necessary to cut off the power supply to all or part of the system and you wish to prevent the luminaires from switching on as a result. The disabling of the emergency function within a zone will remain in effect until the user re-enables the function.

Disabling the emergency function in a given zone also means that cut the zone will be out from automatic and manual function and duration tests.

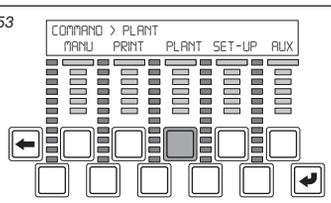
All zones are enabled to begin with.

Fig. 52



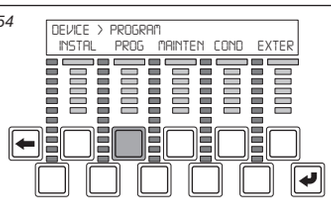
- From the main screen press any key except the one at the top right (fig. 52).
- *The 5 main menu headings will be displayed (fig. 53).*

Fig. 53



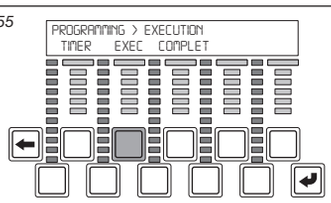
- Press the "PLANT" key (fig. 53).
- Press ENTER ↵ to confirm.
- *The "DEVICE" menu will be displayed (fig. 54).*

Fig. 54



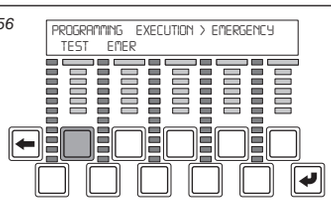
- Press the PROG key (fig. 54).
- Press ENTER ↵ to confirm.
- *The "PROGRAMMATION" menu will be displayed (fig. 55).*

Fig. 55



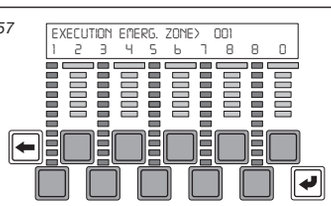
- Press the "EXEC" key (fig. 55).
- Press ENTER ↵ to confirm.
- *The "EXECUTION" menu will be displayed (fig. 56).*

Fig. 56



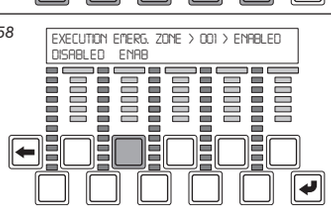
- Press the EMER key to define the domain of the system in which the emergency function will be enabled (fig. 56).
- Press ENTER ↵ to confirm.

Fig. 57



- Specify the desired zone (fig. 57).
- Press ENTER ↵ to confirm.

Fig. 58



- Press the "DISABLED" key to disable the emergency function of all the luminaires belonging to the zone specified or "ENAB" to enable it (fig. 58).
- Press ENTER ↵ to confirm.
- *The Control Unit will automatically go back to the start of the procedure so that you can enable/disable the emergency function in other zones within the system (fig. 57).*

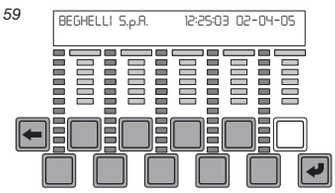
AUTOMATIC PRINTOUT OF TEST REPORTS

From the Control Unit the user can enable or disable automatic printout of reports following the execution of automatic function and duration tests.

The automatic printout function is always enabled for manual function and duration tests. It is recommended to keep the test reports in order to maintain a historical log of the system's performance. In public entertainment facilities, in particular, current laws make it mandatory to keep records of the tests performed to verify the efficiency of the emergency lighting system.

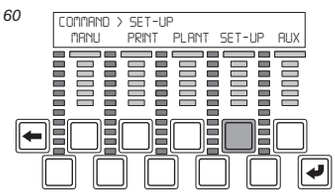
The printout of automatic test reports is initially enabled.

Fig. 59



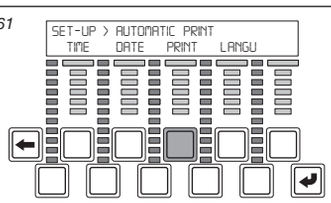
- From the main screen press any key except the one at the top right (fig. 59).
- *The 5 main menu headings will be displayed (fig. 60).*

Fig. 60



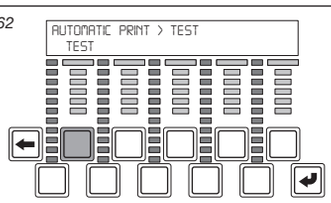
- Press the SET_UP key (fig. 60).
- Press ENTER ↵ to confirm.
- *The SET_UP menu will be displayed (fig. 61).*

Fig. 61



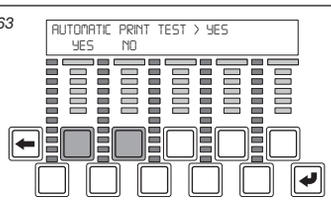
- Press the "PRINT" key (fig. 61).
- Press ENTER ↵ to confirm.
- *The "AUTOMATIC PRINT" menu will appear on the display (fig. 62).*

Fig. 62



- Press the TEST key (fig. 62).
- Press ENTER ↵ to confirm.

Fig. 63



- Press “YES” to enable automatic printout of the results of automatic tests or NO to disable the function (fig. 63).
- Press ENTER ↵ to confirm.
- The Control Unit will automatically go back to the "AUTOMATIC PRINT" menu (fig. 62).

- Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key

The manual control functions enable the user to carry out immediate tests on the luminaires making up the system, in addition to those run automatically by the Control Unit.

RUNNING MANUAL TESTS

At any time the user can run a function or duration test on the luminaires making up the system to supplement the automatic tests periodically performed by the Control Unit. If at the time of testing the Control Unit is unable to execute a test on all of the luminaires, it will print out a partial test report, warning that the test is not yet complete, and memorise which luminaires still have to be tested. As soon as possible, the Control Unit will run the test on the remaining luminaires. When all of the remaining luminaires have been tested, the control unit will print out a complete test report for all of the luminaires tested - not just the ones previously left out - and inform the user that the test is complete.

Example. system luminaires= 165

BEGHELLI S.p.A
12-01-99 15:22
FUNCTIONAL TEST REPORT
165 DEVICES TESTED
001 ERRORS
ZONE 001 N 156 ID 123456
LAMP
TEST NOT COMPLETED

BEGHELLI S.p.A
12-01-99 22:10
FUNCTIONAL TEST REPORT
165 DEVICES TESTED
002 ERRORS
ZONE 001 N 156 ID 123456
LAMP
ZONE 002 N 001 ID 111112
LAMP
TEST COMPLETED

The manual test completion phase can terminate without all pending tests having been run, also when all of the luminaires with tests still pending have clearly been identified as having serious communication faults (at least 48 hours have elapsed since the previous communication with the luminaires). In this case as well, the control unit will declare the test to be completed and print out an overall report.

Example. system luminaires= 165

BEGHELLI S.p.A
12-01-99 15:22
FUNCTIONAL TEST REPORT
165 DEVICES TESTED
000 ERRORS
TEST NON COMPLETO

BEGHELLI S.p.A
14-01-99 15:20
FUNCTIONAL TEST REPORT
165 DEVICES TESTED
001 ERRORS
ZONE 002 N 001 ID 111112
COMMUNICATION
TEST COMPLETED

At any time the user may cancel the execution of a manual test. This will have the effect of immediately suspending the test, which will thus remain incomplete, while the Control Unit will go back to the main screen.

REQUEST FOR IMMEDIATE EXECUTION OF A FUNCTION TEST

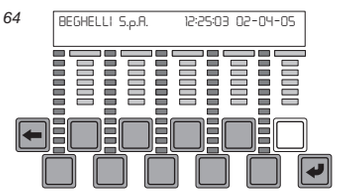
At any time the user can request the execution of a system function test to verify that all luminaires switch on as they should.

The function test lasts one minute.

A manual function test can be interrupted if necessary.

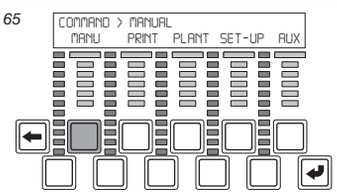
IMPORTANT: running a manual function test will inhibit the execution of automatic function or duration tests over the next 12 hours; any scheduled function tests will be deferred to the following day whereas duration tests or function tests with scheduled frequencies that are multiples of seven days will be deferred to the following week. To run a manual function test:

Fig. 64



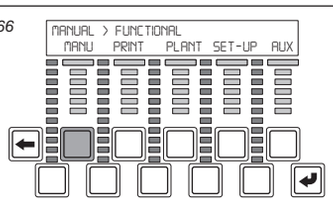
- From the main screen press any key except the one at the top right (fig. 64).
- *The 5 main menu headings will be displayed (fig. 65).*

Fig. 65



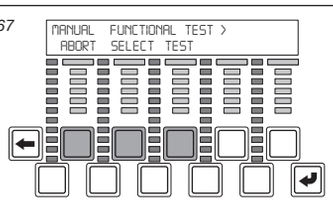
- Press the "MANU" key (fig. 65).
- Press ENTER ↵ to confirm.
- *The MANUAL CONTROL menu will be displayed (fig. 66).*

Fig. 66



- Press the "FUNCT" key (fig. 66).
- Press ENTER ↵ to confirm.

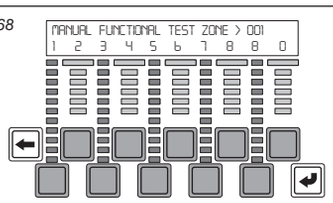
Fig. 67



GLOBAL SYSTEM TEST

- Press the TEST key (fig. 67)
- Press ENTER ↵ to confirm.

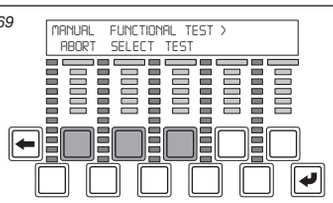
Fig. 68



PARTIAL SYSTEM TEST

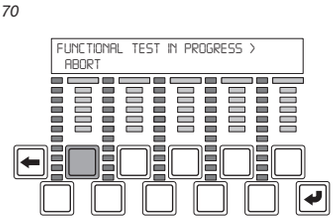
- Select the desired zone (fig. 68).
- Press ENTER ↵ to confirm.
- *The selection menu will be displayed (fig. 69).*

Fig. 69



- Press "ABORT" to suspend the procedure and go back to the "MANUAL" menu or press "SELECT" to specify another zone on which to carry out the test, or press the TEST key to run the function test in the zones specified.

Fig. 70



The Control Unit will display a message to indicate that the test is in progress (fig. 70).
At the end of the test the Control Unit will print a test report.
If the test is complete the Control Unit will go back to the "MANUAL" menu (fig. 66). Otherwise the Control Unit will remain on the currently displayed screen pending execution of the tests yet to be carried out. When all of the remaining luminaires have also been tested, the control unit will print out the overall test report and go back to the "MANUAL" menu (fig. 66).

- Press "ABORT" to interrupt the test at any time.

- Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key.

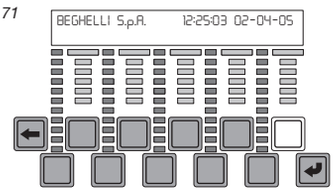
REQUEST FOR IMMEDIATE EXECUTION OF A MANUAL DURATION TEST

At any time the user can run a duration test on the system to check that the batteries of the luminaires operate for the full rated duration. How long a duration test lasts will depend, for each luminaire, on the time interval specified during the system connection phase. A manual duration test can be interrupted if necessary.

IMPORTANT: running a manual duration test will inhibit the execution of automatic function or duration tests over the next 12 hours; any scheduled function tests will be deferred to the following day whereas duration tests or function tests with scheduled frequencies that are multiples of seven days will be deferred to the following week.

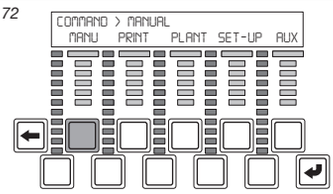
To run a Manual Duration Test:

Fig. 71



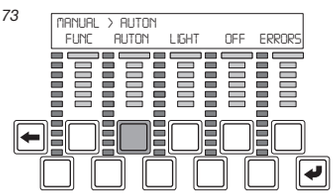
- From the main screen press any key except the one at the top right (fig. 71).
- *The 5 main menu headings will be displayed (fig. 72).*

Fig. 72



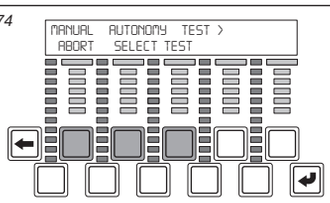
- Press the "MANU" key (fig. 72).
- Press ENTER ↵ to confirm.
- *The "MANUAL" menu will be displayed (fig. 73).*

Fig. 73



- Press the "AUTON" key (fig. 73).
- Press ENTER ↵ to confirm.

Fig. 74



GLOBAL SYSTEM TEST

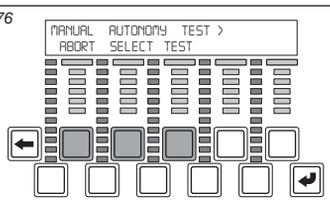
- Press the TEST key (fig. 74)
- Press ENTER ↵ to confirm.

Fig. 75

PARTIAL SYSTEM TEST

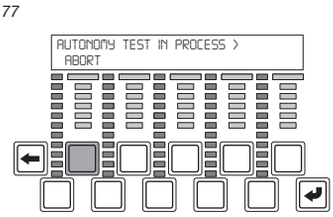
- Select the desired zone (fig. 75).
- Press ENTER ↵ to confirm.
- *The selection menu will be displayed (fig. 76).*

Fig. 76



- Press "ABORT" to suspend the procedure and go back to the "MANUAL" menu or press "SELECT" to specify another zone on which to carry out the test, or press the TEST key to run the duration test in the zones specified.

Fig. 77



The Control Unit will display a message to indicate that the test is in progress (fig. 77).
At the end of the test the Control Unit will print a test report.
If the test is complete the Control Unit will go back to the "MANUAL" menu (fig. 73). Otherwise the Control Unit will remain on the currently displayed screen pending execution of the tests yet to be carried out. When all of the remaining luminaires have also been tested, the control unit will print out the overall test report and go back to the "MANUAL" menu (fig. 73).

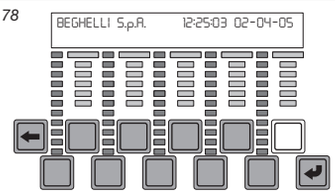
- Press "ABORT" to interrupt the test at any time.

- Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key.

SWITCHING ON THE LUMINAIRES

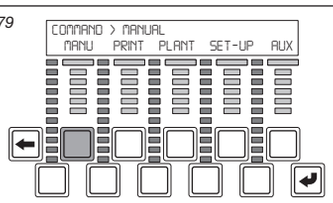
The Control Unit can override the normal emergency standby function to switch on all luminaires in the system.
The maximum period of operation will obviously depend on the rated duration of each luminaire. The override command will remain active, however, until the user explicitly requests its deactivation.
IMPORTANT: using this function, above all for a prolonged period, will drain the batteries of the luminaires and inhibit the execution of any scheduled automatic function or duration tests over the next 12 hours.
In the override mode, the Control Unit will also switch on any luminaires for which the emergency and test functions have been disabled.

Fig. 78



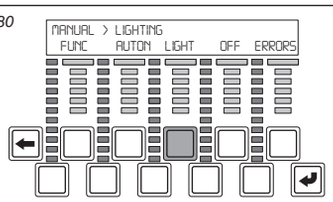
- From the main screen press any key except the one at the top right (fig. 78).
- *The 5 main menu headings will be displayed (fig. 79).*

Fig. 79



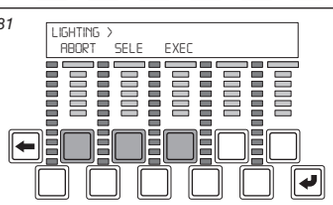
- Press the "MANU" key (fig. 79).
- Press ENTER ↵ to confirm.
- *The "MANUAL" menu will be displayed (fig. 80).*

Fig. 80



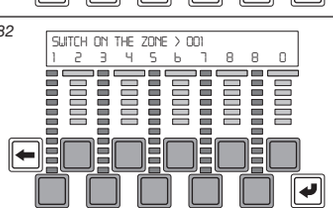
- Press the "LIGHT" key (fig. 80).
- Press ENTER ↵ to confirm.

Fig. 81



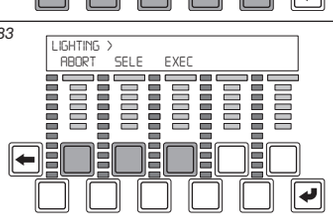
SWITCHING ON THE ENTIRE SYSTEM
- Press the TEST key (fig. 81)
- Press ENTER ↵ to confirm.

Fig. 82



SWITCHING ON PART OF THE SYSTEM 1 2 3 456789 0
- Select the desired zone (fig. 82).
- Press ENTER ↵ to confirm.
- *The selection menu will be displayed (fig. 83).*

Fig. 83



- Press "ABORT" to suspend the procedure and go back to the "MANUAL" menu or press "SELECT" to specify another zone or press the TEST key to switch on the luminaires in the zones specified (fig. 83).
- Press ENTER ↵ to confirm.

- On receiving a request to switch on the luminaires, the Control Unit will display a message to indicate that the requested operation is taking place. The message will continue to be shown until the user explicitly requests to interrupt the procedure (fig. 84)

Fig. 84

- Press "ABORT" to switch off the luminaires (fig. 84).
- Press ENTER ↵ to confirm.
- The Control Unit will automatically go back to the "MANUAL" menu (fig. 80).

- Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key.

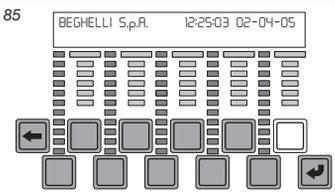
SHUTTING DOWN THE SYSTEM

When it is necessary to shut down the power supply to the entire system for a prolonged period, for example during renovation work or seasonal closing of the facility served by the lighting system, it is recommended to carry out the system shutdown procedure to prevent luminaires from switching on and draining the batteries.

When mains power is restored the system will automatically become operational again, with all luminaires enabled to provide emergency lighting.

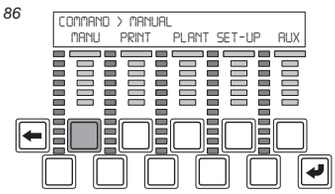
The Control Unit battery has a lifetime of around 4 months: after this time the time/date setting will be lost but not the data regarding the system connections, configuration and programming

Fig. 85



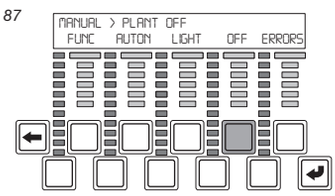
- From the main screen press any key except the one at the top right (fig. 85).
- *The 5 main menu headings will be displayed (fig. 86).*

Fig. 86



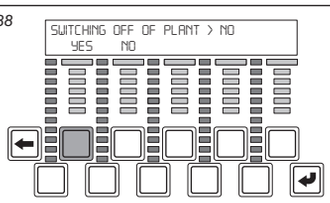
- Press the "MANU" key (fig. 86).
- Press ENTER ↵ to confirm.
- *The "MANUAL" menu will be displayed (fig. 87).*

Fig. 87



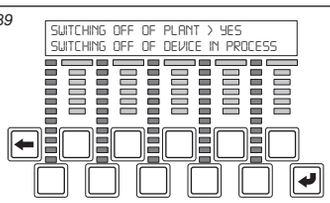
- Press the OFF key (fig. 87).
- Press ENTER ↵ to confirm.

Fig. 88



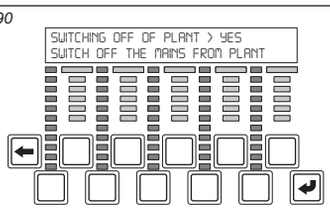
- Press the “YES” key (fig. 88).
- Press ENTER ↵ to confirm.

Fig. 89



- The Control Unit will send a signal to all luminaires in the system to disable the emergency function (fig. 89).

Fig. 90



The Control Unit will wait until the power supply to the system is cut off before shutting down (fig. 90).

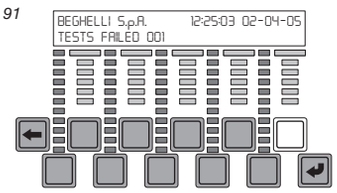
CLEARING ERRORS

The Control Unit can automatically diagnose and warn of different types of errors and faults occurring within the system:

- tube fault: the function test performed on the lamp has given a negative outcome.
- battery fault: the duration test performed on the luminaire has given a negative outcome.
- communication error: the luminaire has not communicated with the Control Unit for at least 48 hours.

Whereas warnings of communication errors disappear automatically once communication has been restored, fault warnings appearing on the Control Unit display and local fault indications on the luminaires will persist, even after the cause is removed, until cleared by the user. For this reason, once the necessary steps have been taken to resolve the problem and restore normal device operating conditions, the user must proceed to clear the error warnings concerning the faults removed.

Fig. 91

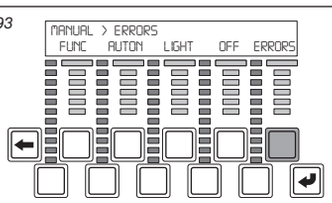


- From the main screen press any key except the one at the top right (fig. 91).
- *The 5 main menu headings will be displayed (fig. 92).*

Fig. 92

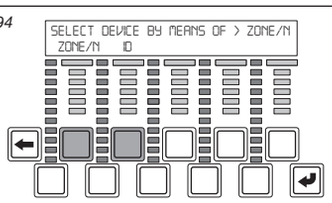
- Press the "MANU" key (fig. 92).
- Press ENTER ↵ to confirm.
- *The "MANUAL" menu will be displayed (fig. 93).*

Fig. 93



- Press the "ERRORS" key (fig. 93).
- Press ENTER ↵ to confirm.
- The Control Unit will prompt you to specify how you want to select the luminaire: Using the 6-digit identification code or the zone/number combination assigned to the luminaire during the connection phase (default).

Fig. 94



- Choose the selection mode by pressing the corresponding key (fig. 94).
- Press ENTER ↵ to confirm.

Indicate the luminaire by specifying the zone/number combination or 6-digit identification code, depending on your previous choice (fig. 95 fig. 96).

Fig. 95

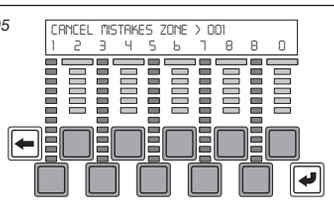
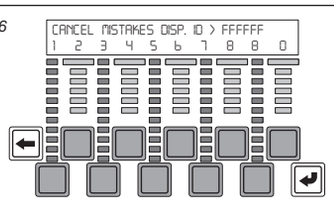
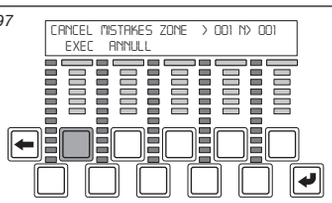


Fig. 96



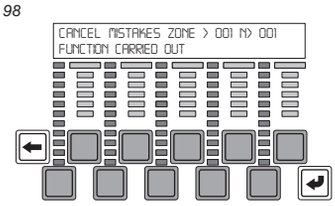
- Press ENTER ↵ to confirm.

Fig. 97



- Press "ABORT" to go back to the screen for selecting the luminaire or "EXEC" to clear all error indications relating to the luminaire specified (fig. 97). At the end of the procedure, the outcome will be displayed (fig. 98).

Fig. 98



- **Press any key (fig. 98).**
- *The Control Unit will automatically go back to the start of the procedure so you can clear errors relating to another luminaires (fig. 95 fig. 96).*

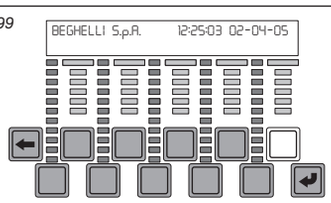
CHECK OF PLANT STATUS

The Control Unit features a liquid crystal display, which, along with the local printer, enables the user to view the system status and any errors affecting luminaires connected to the system.

DISPLAY OF SYSTEM CONFIGURATION

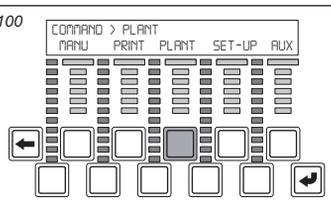
At any time the user can display data regarding all of the luminaires in the system (6-digit Identification Code) as well as their programming parameters (Zone/Number, length of duration test).

Fig. 99



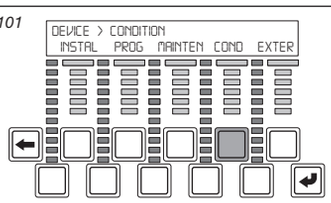
- **From the main screen press any key except the one at the top right (fig. 99).**
- *The 5 main menu headings will be displayed (fig. 100).*

Fig. 100



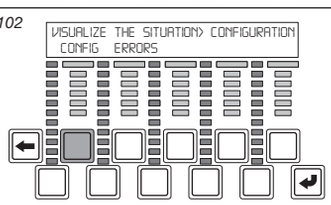
- **Press the "PLANT" key (fig. 100).**
- **Press ENTER ↵ to confirm.**
- *The "DEVICE" menu will be displayed (fig. 101).*

Fig. 101



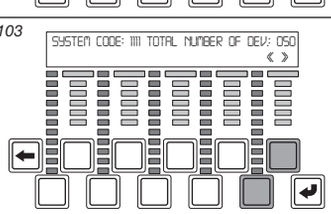
- **Press the "COND" key (fig. 101).**
- **Press ENTER ↵ to confirm.**
- *A menu will appear with the heading "VISUALIZE SITUATION" (fig. 102).*

Fig. 102



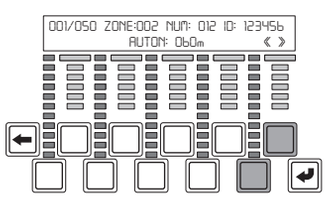
- **Press the CONFIG key (fig. 102).**
- **Press ENTER ↵ to confirm.**
- *The Control Unit will display the System Code and the total number of luminaires connected (fig. 103).*

Fig. 103



- **Press one of the arrow keys "<<" ">>" to call up a detailed analysis of each individual luminaire (fig. 103).**
- *For each luminaire the Control Unit will show the 6-digit factory Identification Code, the zone number, the sequential number within the zone and length of the duration test, parameters assigned during the system connection stage.*

Fig. 104



- Press “<< “ to go to the previous luminaire or “>>” to go to the next one (fig. 104).

- Press the BACKSPACE ⬅ key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key

DISPLAY OF ERRORS

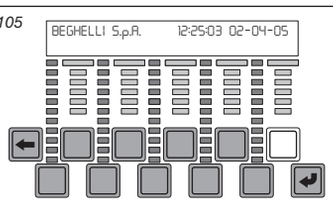
In addition to displaying general error messages on the main screen, the Control Unit also offers a specific function for calling up a detailed analysis of errors and the devices responsible. The causes of errors may be indicated as:

- tube fault: the function test performed on the lamp has given a negative outcome.
- battery fault: the duration test performed on a luminaire has given a negative outcome.
- communication error: the luminaire has not communicated with the Control Unit for at least 48 hours.

Whereas warnings of communication errors disappear automatically once communication has been restored, fault warnings appearing on the Control Unit display (battery, tube) and local fault indications on the luminaires responsible will persist, even after the cause is removed, until cleared by the user. Some warnings of tube or battery faults could thus regard problems already resolved. To display only the errors actually present you will have to first clear all the luminaire error indications,

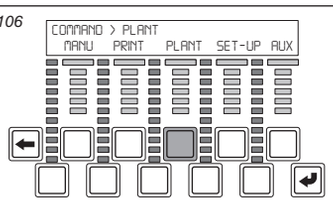
(see instructions for clearing errors) and then run a function and duration test to verify the actual current status of the luminaires.

Fig. 105



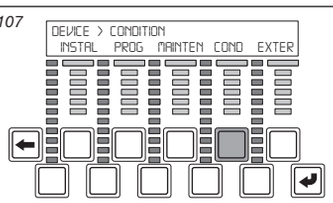
- From the main screen press any key except the one at the top right (fig. 105).
- *The 5 main menu headings will be displayed (fig. 106).*

Fig. 106



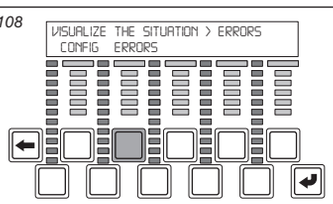
- Press the "PLANT" key (fig. 106).
- Press ENTER ↵ to confirm.
- *The "DEVICE" menu will be displayed (fig. 107).*

Fig. 107



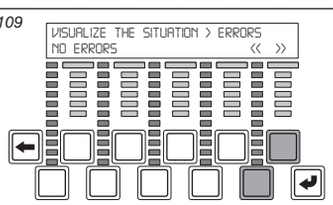
- Press the "COND" key (fig. 107).
- Press ENTER ↵ to confirm.
- *A menu will appear with the heading "VISUALIZE SITUATION" (fig. 108).*

Fig. 108



- Press the ERROR key (fig. 108).
- Press ENTER ↵ to confirm.
- For each faulty luminaire the Control Unit will show the zone number, sequential number inside the zone and the cause of the error (communication, tube, battery) (fig. 112).

Fig. 109



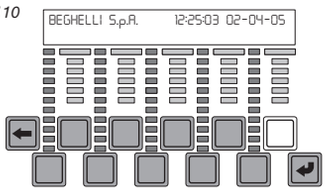
Press “<<“ to go to the previous luminaire or “>>” to go to the next one (fig. 109).

- Press the BACKSPACE key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key.

PRINTOUT OF CONFIGURATION

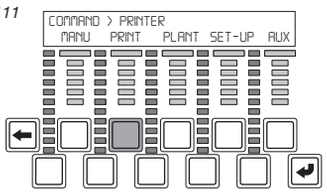
At any time the user can request a printout of the system configuration or the configuration of any individual zone within the system.

Fig. 110



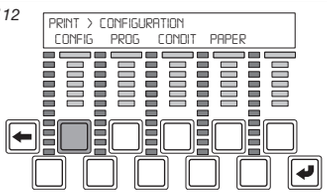
- From the main screen press any key except the one at the top right (fig. 110).
- *The 5 main menu headings will be displayed (fig. 111).*

Fig. 111



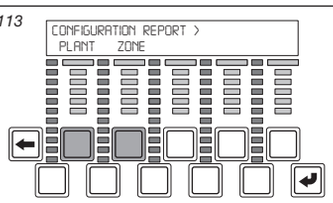
- Press the "PRINT" key (fig. 111).
- Press ENTER ↵ to confirm.
- *The "PRINTER" menu will appear on the display (fig. 112).*

Fig. 112



- Press the CONFIG key (fig. 112).
- Press ENTER ↵ to confirm.
- *A menu will appear with the heading "CONFIGURATION REPORT" (fig. 113).*

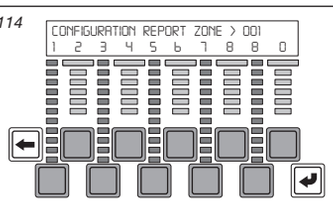
Fig. 113



- Press the "PLANT" key to print the overall system configuration or "ZONE" to print the data relative to a specific zone within the system (fig. 113).
- Press ENTER ↵ to confirm.

If you request a printout for an individual zone within the system, you will be prompted to specify the number.

Fig. 114



- Specify the number of the desired zone (fig. 114).
- Press ENTER ↵ to confirm.
  After printing the data requested the Control Unit will go back to the "PRINTER" menu (fig. 112).
- Press the "PAPER" key (fig. 112) to feed out the complete printout.

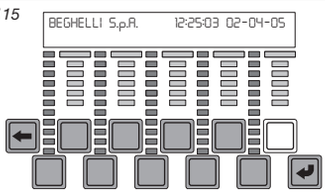
- Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key.

PRINTOUT OF PROGRAMMING PARAMETERS

At any time you can request a printout of programming data regarding:

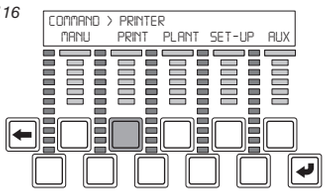
- the SYSTEM (automatic test timers, completion of automatic tests, running of separate automatic duration tests on odd- and even-numbered luminaires).
- LUMINAIRE (6-digit Identification Code, zone/number within the system, programmed length of duration test).
- SET-UP (language, date of last automatic tests performed, Control Unit software and hardware version, programming of auxiliary ports CN2, CN3).

Fig. 115



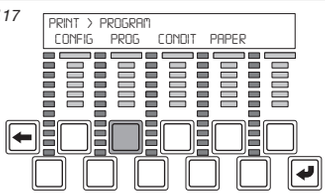
- From the main screen press any key except the one at the top right (fig. 115).
- *The 5 main menu headings will be displayed (fig. 116).*

Fig. 116



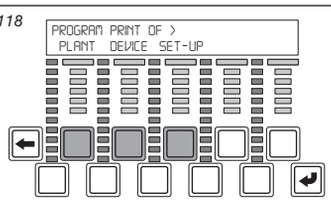
- Press the "PRINT" key (fig. 116).
- Press ENTER ↵ to confirm.
- *The "PRINTER" menu will be displayed (fig. 117).*

Fig. 117



- Press the PROG key (fig. 117).
- Press ENTER ↵ to confirm.
- *A menu will appear with the heading "PRINT PROGRAMMATION" (fig. 118).*

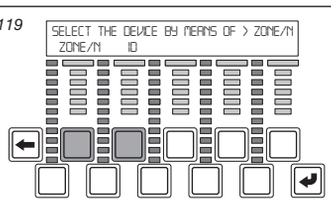
Fig. 118



- Press the "PLANT" key to print out the general system programming or the "DEVICE" key to print the programming data relative to an individual luminaire or the SET-UP key to print the general programming data of the CTOC system (fig. 118).
- Press ENTER ↵ to confirm.

If you request a printout of programming data regarding an individual luminaire, you will have to specify how you want to select it: Using the 6-digit identification code or the zone/number combination assigned to the luminaire during the connection phase (default).

Fig. 119



- Choose the selection mode by pressing the corresponding key (fig. 119).
- Press ENTER ↵ to confirm.

- Indicate the luminaire by specifying the zone/number combination or 6-digit identification code, depending on your previous choice (fig. 120 fig. 121).

Fig. 120

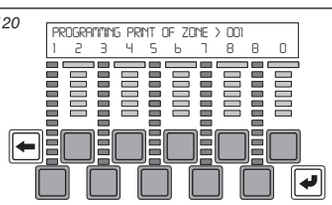
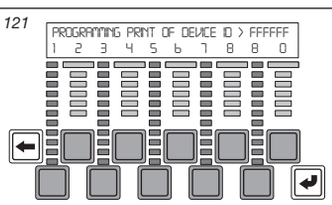


Fig. 121



- Press ENTER ↵ to confirm.

After printing the data requested the Control Unit will go back to the "PRINTER" menu (fig. 117).

- Press the "PAPER" key (fig. 117) to feed out the complete printout.
- Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key.

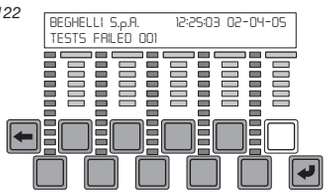
PRINTOUT OF ERRORS

At any time you can request a detailed printout specifying the current system errors and which luminaires are responsible. The causes of error may be indicated as:

- tube fault: the function test performed on the lamp has given a negative outcome.
- battery fault: the duration test performed on a luminaire has given a negative outcome.
- communication error: the luminaire has not communicated with the Control Unit for at least 48 hours.

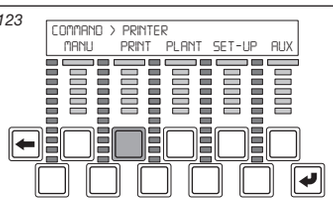
Whereas warnings of communication errors disappear automatically once communication has been restored, fault warnings appearing on the Control Unit display (battery, tube) and local fault indications on the luminaires responsible will persist, even after the cause is removed, until cleared by the user. Some warnings of tube or battery faults could thus regard problems already resolved. To display only the errors actually present you will have to clear all the luminaire error indications (see instructions for clearing errors) and then run a function and duration test to verify the actual current status of the luminaires.

Fig. 122



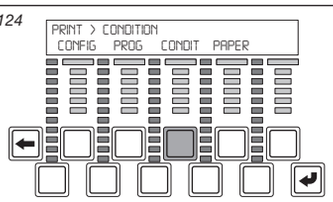
- From the main screen press any key except the one at the top right (fig. 122).
- *The 5 main menu headings will be displayed (fig. 123).*

Fig. 123



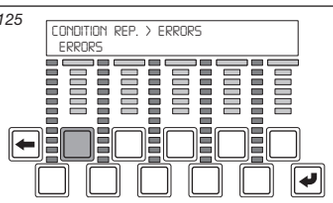
- Press the "PRINT" key (fig. 123).
- Press ENTER ↵ to confirm.
- *The "PRINTER" menu will be displayed (fig. 124).*

Fig. 124



- Press the "COND" key (fig. 124).
- Press ENTER ↵ to confirm.
- *A menu will appear with the heading "PRINT CONDITION" (fig. 125).*

Fig. 125



- Press the "ERRORS" key
- Press ENTER ↵ to confirm.
  After printing the data requested the Control Unit will go back to the "PRINTER" menu (fig. 124).
- Press the "PAPER" key (fig. 124) to feed out the complete printout.

- Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key

EXPANDING THE SYSTEM

It will always be possible to expand a CTOC system that is already installed and operational.

New luminaires must be in a cleared status, as when they left the factory; if necessary they may be cleared via a specific procedure launched from the Control Unit (see instructions for clearing a luminaire). The procedures for expanding a system are identical to those use for its installation: AUTOMATIC configuration (see system configuration).Using the automatic configuration procedure you can fit the new luminaires into place and launch the automatic recognition procedure, specifying the total number of luminaires you wish to add to the system.

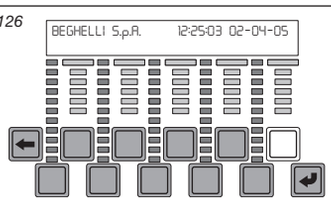
REPLACING A LUMINAIRE

The Control Unit features a simple, fast procedure for replacing an already installed luminaire with a new one. For this purpose it is sufficient to

- plug the new luminaire into the power socket of the Control Unit.
- launch the replacement procedure, specifying the 6-digit Identification Code of the luminaire you want to replace.
- remove the old luminaire from its mount and fit the new one in its place.

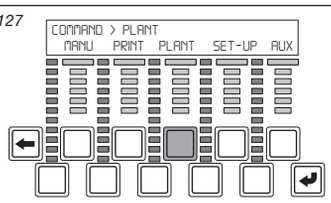
The procedure will automatically delete the specified device from the system and connect the new one, assigning it the same programming parameters (zone/number combination, length of duration test) as the luminaire that has been replaced.

Fig. 126



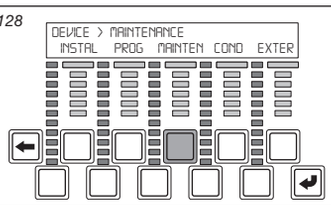
- **Connect the new luminaire to the same power point as the Control Unit.**
- From the main screen press any key except the one at the top right (fig. 126).
- *The 5 main menu headings will be displayed (fig. 127).*

Fig. 127



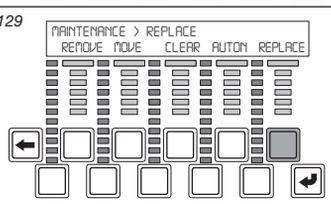
- Press the "PLANT" key (fig. 127).
- Press ENTER ↵ to confirm.
- *The "DEVICE" menu will be displayed (fig. 128).*

Fig. 128



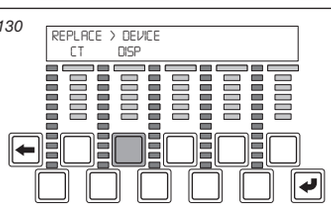
- Press the "MAINTEN" key (fig. 128).
- Press ENTER ↵ to confirm.
- *The "MAINTENANCE" menu will be displayed (fig. 129).*

Fig. 129



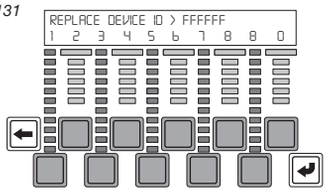
- Press the "REPLACE" key (fig. 129).
- Press ENTER ↵ to confirm.
- *A menu will appear with the heading "REPLACE" (fig. 130).*

Fig. 130



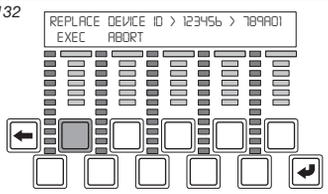
- Press the "DEVICE" key (fig. 130)
- Press ENTER ↵ to confirm.

Fig. 131



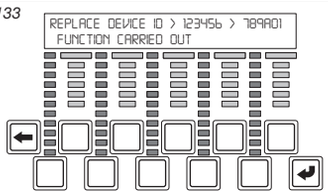
- Specify the 6-digit Identification Code of the luminaire to be replaced (fig. 131).
- Press ENTER ↵ to confirm.

Fig. 132



The Control Unit will search for the new luminaire and read its 6-digit Identification Code (fig. 132).

Fig. 133



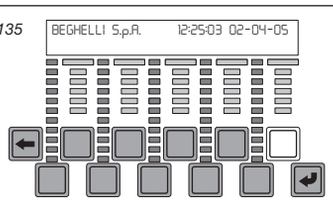
- The Control Unit will display the 6-digit Identification Code of the new luminaire.
- Press "ABORT" to interrupt the procedure or "EXEC" to confirm the replacement (fig. 133).

DELETING A LUMINAIRE

Any of the installed luminaires can be deleted from the system whenever the user wishes to reduce the system itself. Deleting a luminaire means disconnecting it from the system and instructing the Control Unit to:

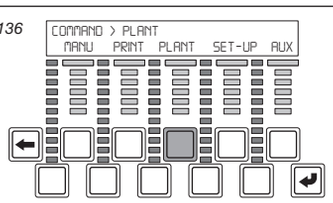
- suspend periodic tests on the device removed.
- make the zone/number combination formerly assigned to it available for the installation of a new luminaire

Fig. 135



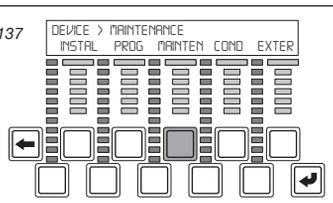
- From the main screen press any key except the one at the top right (fig. 135).
- *The 5 main menu headings will be displayed (fig. 136).*

Fig. 136



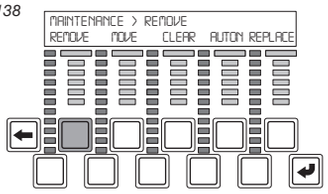
- Press the "PLANT" key (fig. 136).
- Press ENTER ↵ to confirm.
- *The "DEVICE" menu will be displayed (fig. 137).*

Fig. 137



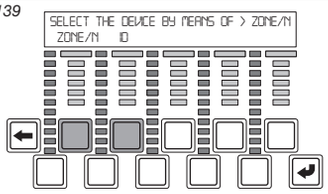
- Press the "MAINTEN" key (fig. 137).
- Press ENTER ↵ to confirm.
- The "MAINTENANCE" menu will be displayed (fig. 138).

Fig. 138



- **Press the "MOVE" key (fig. 138).**
- **Press ENTER ↵ to confirm.**
- *The Control Unit will prompt you to specify how you want to select the luminaire: 6-digit Identification Code or zone/number combination assigned to the luminaire during the connection phase (default).*

Fig. 139



- **Choose the selection mode by pressing the corresponding key (fig. 139).**
- **Press ENTER ↵ to confirm.**

- **Indicate the luminaire by specifying the zone/number combination or 6-digit identification code, depending on your previous choice (fig. 140 fig. 141).**

Fig. 140

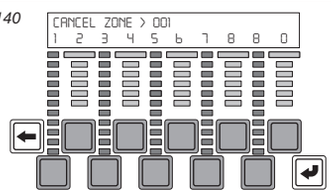
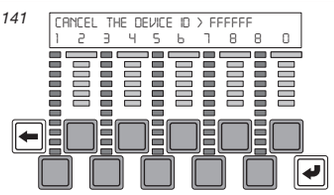
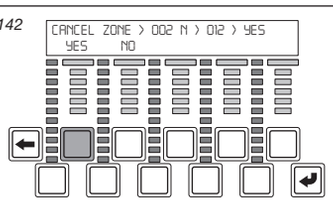


Fig. 141



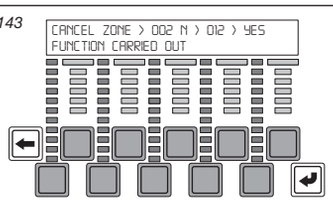
- **Press ENTER ↵ to confirm.**
- **The control unit will prompt the user for an explicit confirmation before carrying out the operation requested (fig. 142).**

Fig. 142



- **Press NO to cancel the procedure and go back to the screen for selecting the luminaire to be deleted or "YES" to remove the luminaire selected from the system (fig. 142).**
- **Press ENTER ↵ to confirm.**
  At the end of the procedure, the outcome will be displayed (fig. 143).

Fig. 143

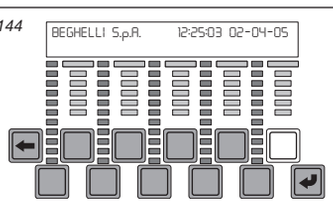


- **Press any key (fig. 143).**
- *The Control Unit will automatically go back to the start of the procedure so that you can delete other luminaires from the system (fig. 140 fig. 141).*

MOVING A LUMINAIRE (REDEFINITION OF ZONES)

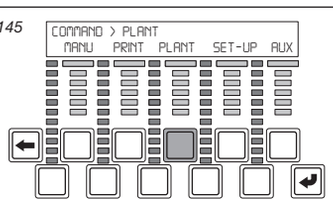
It will always be possible to move a luminaire into a zone other than the one to which it was initially assigned by specifying a new zone and, if necessary, a different sequential number within the zone. This procedure is especially useful for reassigning the zones of luminaires previously connected via the automatic procedure.

Fig. 144



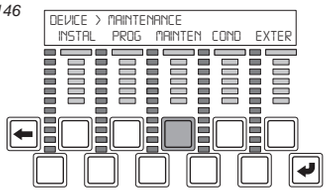
- **From the main screen press any key except the one at the top right (fig. 144).**
- *The 5 main menu headings will be displayed (fig. 145).*

Fig. 145



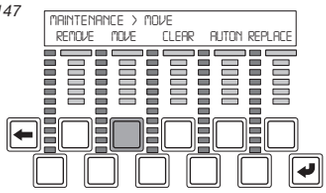
- **Press the "PLANT" key (fig. 145).**
- **Press ENTER ↵ to confirm.**
- *The "DEVICE" menu will be displayed (fig. 146).*

Fig. 146



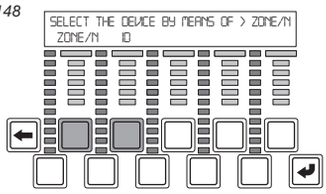
- **Press the "MAINTEN" key (fig. 146).**
- **Press ENTER ↵ to confirm.**
- *The "MAINTENANCE" menu will be displayed (fig. 147).*

Fig. 147



- **Press the "MOVE" key (fig. 147).**
- **Press ENTER ↵ to confirm.**
- *The Control Unit will prompt you to specify how you want to select the luminaire: Using the 6-digit identification code or the zone/number combination assigned to the luminaire during the connection phase (default).*

Fig. 148



- **Choose the selection mode by pressing the corresponding key (fig. 148).**
- **Press ENTER ↵ to confirm.**

- **Indicate which luminaire you want to move by specifying the zone/number combination or 6-digit identification code, depending on your previous choice (fig. 149 fig. 150).**

Fig. 149

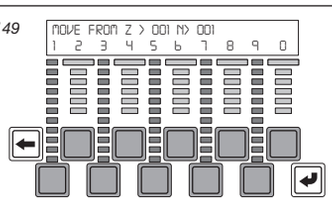
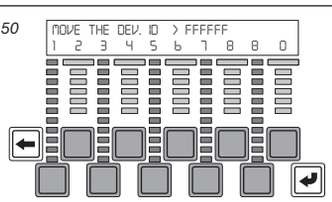
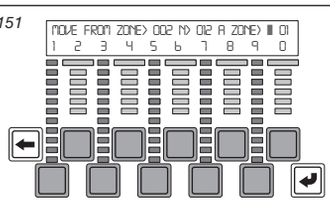


Fig. 150



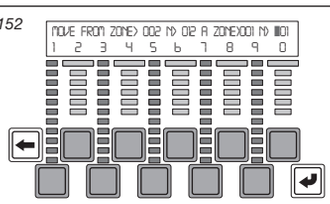
- **Press ENTER ↵ to confirm the luminaire specified.**

Fig. 151



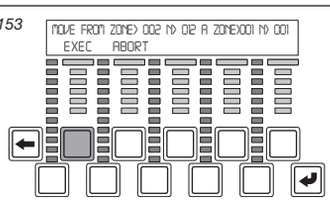
- **Assign the selected luminaire to a new zone (fig. 151).**
- **Press ENTER ↵ to confirm.**

Fig. 152



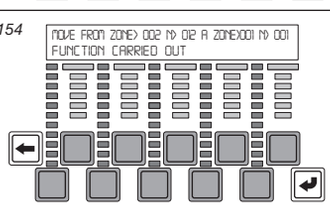
- **Assign the luminaire a sequential number inside the zone specified (fig. 152).**
- **Press the BACKSPACE ← key to go back to the zone selection screen or press ENTER ↵ to confirm.**
- **The control unit will prompt the user for an explicit confirmation before carrying out the operation requested (fig. 153).**

Fig. 153



- **Press "ABORT" to cancel the procedure and go back to the screen for selecting the luminaire to be moved, or press "EXEC" to make the move requested (fig. 153). At the end of the procedure, the outcome will be displayed (fig. 154).**

Fig. 154

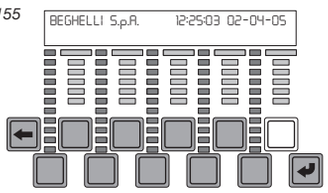


- **Press any key (fig. 154).**
- **The Control Unit will automatically go back to the start of the procedure to enable you to move other luminaires in the system (fig. 149 fig. 150).**

CHANGING THE LENGTH OF A LUMINAIRE DURATION TEST

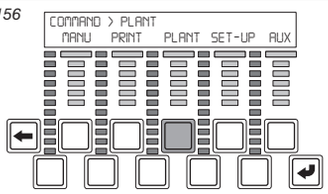
At any time you can change the length of the duration test assigned to each luminaire during the connection phase, selecting from one of the following options: 60m, 90m, 120m, 150m, 180m, 210, 220m.

Fig. 155



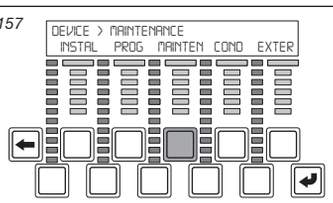
- **From the main screen press any key except the one at the top right (fig. 158).**
- *The 5 main menu headings will be displayed (fig. 159).*

Fig. 156



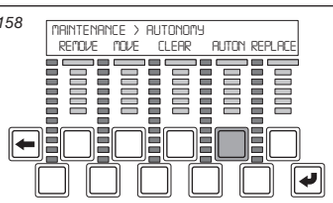
- **Press the "PLANT" key (fig. 159).**
- **Press ENTER ↵ to confirm.**
- *The "DEVICE" menu will be displayed (fig. 160).*

Fig. 157



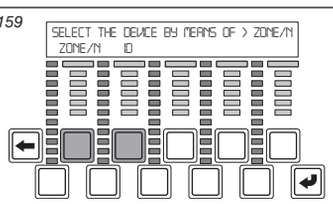
- **Press the "MAINTEN" key (fig. 160).**
- **Press ENTER ↵ to confirm.**
- *The "MAINTENANCE" menu will be displayed (fig. 161).*

Fig. 158



- **Press the "AUTON" key (fig. 161).**
- **Press ENTER ↵ to confirm.**
- *The Control Unit will prompt you to specify how you want to select the luminaire: using the 6-digit Identification Code or zone/number assigned to the luminaire during the connection phase (default).*

Fig. 159



- **Choose the selection mode by pressing the corresponding key (fig. 162).**
- **Press ENTER ↵ to confirm.**

- **Indicate the luminaire by specifying the zone/number combination or 6-digit Identification Code, depending on your previous choice (fig. 163 fig. 164).**

Fig. 160

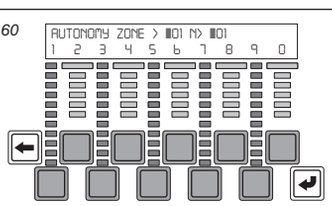
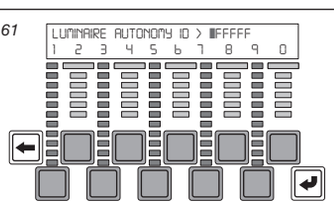
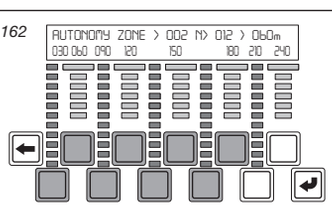


Fig. 161



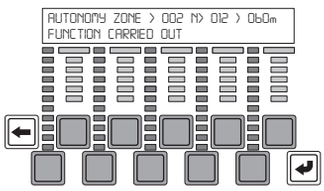
- **Press ENTER ↵ to confirm the luminaire specified**

Fig. 162



- **Assign the specified luminaire a new duration test time (fig. 162).**
- **Press ENTER ↵ to confirm.**
  At the end of the procedure, the outcome will be displayed (fig. 163).

Fig. 163

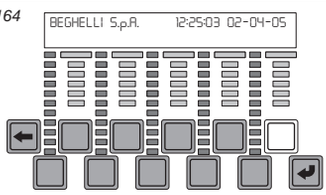


- Press any key (fig. 163).
- The Control Unit will automatically go back to the start of the procedure so that you can change the duration test setting of other luminaires in the system (fig. 160 fig. 161).

CLEARING A LUMINAIRE

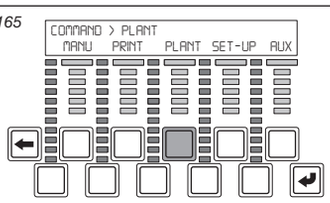
Clearing a luminaire means restoring it to its original factory conditions so that it can be connected to a CTOC Control Unit. The clearing procedure can be used only for devices that do not belong to the currently installed system.

Fig. 164



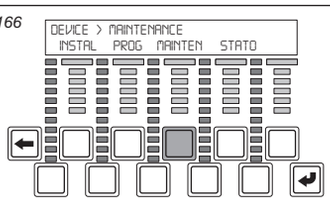
- **Connect the luminaire to be cleared to the same power point as the Control Unit.**
- From the main screen press any key except the one at the top right (fig. 164).
- *The 5 main menu headings will be displayed (fig. 165).*

Fig. 165



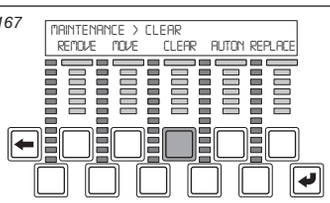
- Press the "PLANT" key (fig. 165).
- Press ENTER ↵ to confirm.
- *The "DEVICE" menu will be displayed (fig. 166).*

Fig. 166



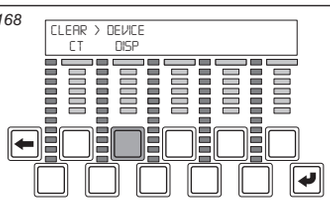
- Premere il tasto MAINTEN (fig. 166).
- Press ENTER ↵ to confirm.
- *The "MAINTENANCE" menu will be displayed (fig. 167).*

Fig. 167



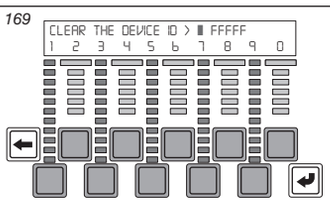
- Press the "CLEAR" key (fig. 167).
- Press ENTER ↵ to confirm.
- *The "CLEAR" menu will appear on the display (fig. 168).*

Fig. 168



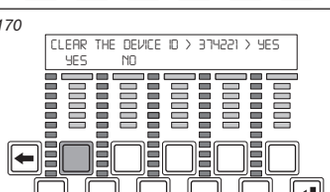
- Press the "DEVICE" key (fig. 168).
- Press ENTER ↵ to confirm.

Fig. 169



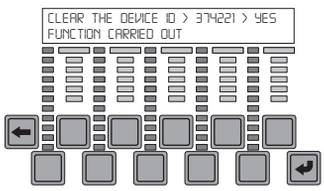
- Specify the 6-digit Identification Code of the luminaire to be cleared (fig. 169).
- Press ENTER ↵ to confirm.
- *The Control Unit will prompt the user for explicit confirmation before carrying out the operation requested*

Fig. 170



- Press NO to cancel the procedure and go back to the screen for selecting the luminaire to be cleared or “YES” to clear the luminaire specified (fig. 170).
- Press ENTER ↵ to confirm.
  At the end of the procedure, the outcome will be displayed (fig. 171). Should the procedure fail, check that the luminaire to be cleared is correctly connected to the same power point as the Control Unit and repeat the procedure.

Fig. 171



- **Press any key (fig. 171).**
- *The Control Unit will automatically go back to the start of the procedure so that you can clear other luminaires (fig. 169).*

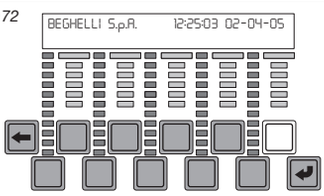
REPLACING THE CONTROL UNIT

It is possible to replace the Control Unit of an already installed, fully operational CTOC system with a new one while maintaining the existing system configuration. The new Control Unit can automatically retrieve information about all of the luminaires in the system: it can recognise them through the System Code assigned during the configuration phase and read their programming parameters (Zone/Number, duration).

The Control Unit will continue to run a search for additional luminaires until the user explicitly requests to interrupt the procedure. After completing the replacement procedure the user need only set the time and date and automatic test functions on the new Control Unit and the system will once again be fully operational.

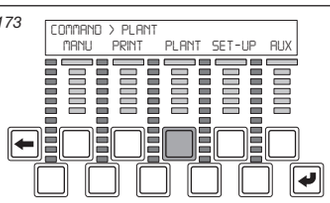
The new Control Unit must be in a cleared status, as when it left the factory, or restored to this condition using the reset procedure (see instructions for resetting the Control Unit).

Fig. 172



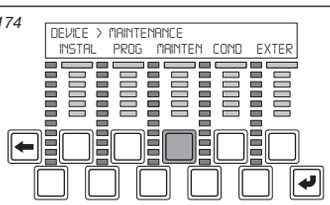
- **From the main screen press any key except the one at the top right (fig. 172).**
- *The 5 main menu headings will be displayed (fig. 173).*

Fig. 173



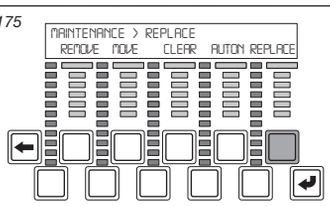
- **Press the "PLANT" key (fig. 173).**
- **Press ENTER ↵ to confirm.**
- *The "DEVICE" menu will be displayed (fig. 174).*

Fig. 174



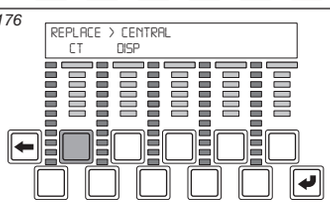
- **Press the "MAINTEN" key (fig. 174).**
- **Press ENTER ↵ to confirm.**
- *The "MAINTENANCE" menu will be displayed (fig. 175).*

Fig. 175



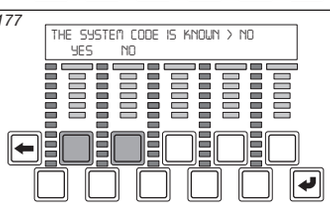
- **Press the "REPLACE" key (fig. 175).**
- **Press ENTER ↵ to confirm.**
- *A menu will appear with the heading "REPLACE" (fig. 176).*

Fig. 176



- **Press the "CT" key (fig. 176).**
- **Press ENTER ↵ to confirm.**
- *You will be asked if you know the System Code. If the Control Unit is not cleared the procedure will be interrupted.*

Fig. 177



- **Press NO if you do not know the system code or “YES” if you do (fig. 177). (To find out the System Code request a display or printout of the system configuration).**
- **Press ENTER ↵ to confirm.**

If you know the System Code:

- Specify the system code, pressing '>>', if necessary, to shift from numbers to letters or vice versa (fig. 178 fig. 179).

Fig. 178

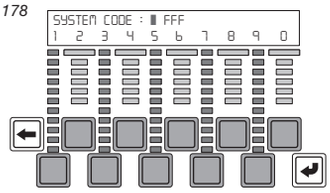
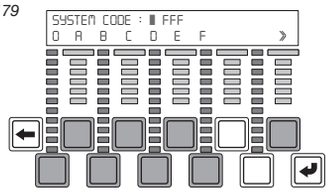


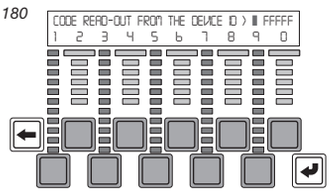
Fig. 179



- Press ENTER ↵ to confirm.

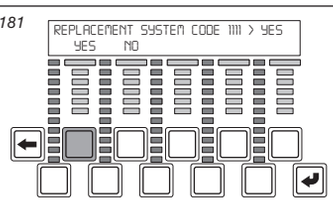
If you don't know the System Code:

Fig. 180



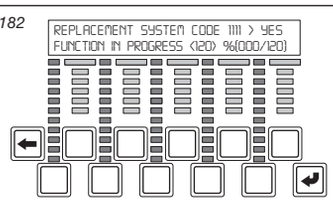
- Specify the 6-digit identification code of a luminaire belonging to the system and located on the power line in the vicinity of the Control Unit, from which the System Code can be read (fig. 180).
- Press ENTER ↵ to confirm.
  In both cases the Control Unit will prompt the user for explicit confirmation before carrying out the operation requested.

Fig. 181



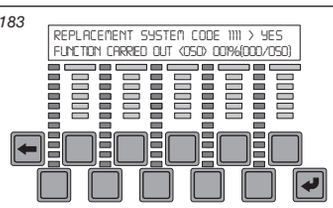
- Press NO to cancel the procedure and go back to the "MAINTENANCE" menu or “YES” to go ahead with the Control Unit replacement (fig. 181).
- Press ENTER ↵ to confirm.

Fig. 182



- *The Control Unit will display the number of luminaires retrieved thus far along with a progress index (fig. 182).*
  At the end of the procedure it will display the outcome and total number of luminaires retrieved (fig. 183).

Fig. 183

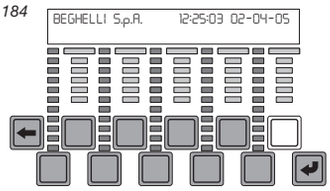


The Control Unit will remain on the currently displayed screen and continue running a search for luminaires until the user explicitly requests to interrupt the procedure by pressing any key. The end of the procedure may not be immediate because the Control Unit might have to complete the search attempt underway. At this stage, besides the number of luminaires retrieved thus far and a progress index, the Control Unit will also display the number of times the procedure has been carried out (fig. 183).

RESETTING THE CONTROL UNIT

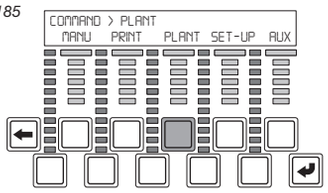
Resetting the Control Unit means erasing its memory and thus erasing all the luminaires that may previously have been configured. This procedure should thus be used with extreme caution and only in cases where the system needs to be completely reinstalled.

Fig. 184



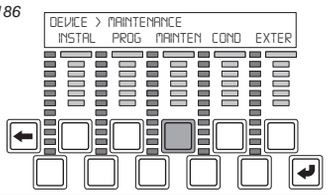
- **From the main screen press any key except the one at the top right (fig. 184).**
- *The 5 main menu headings will be displayed (fig. 185).*

Fig. 185



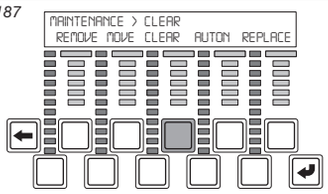
- **Press the "PLANT" key (fig. 185).**
- **Press ENTER ↵ to confirm.**
- *The "DEVICE" menu will be displayed (fig. 186).*

Fig. 186



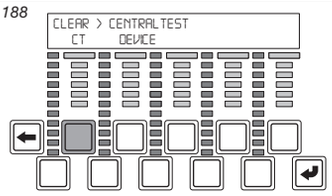
- **Press the "MAINTEN" key (fig. 186).**
- **Press ENTER ↵ to confirm.**
- *The "MAINTENANCE" menu will be displayed (fig. 187).*

Fig. 187



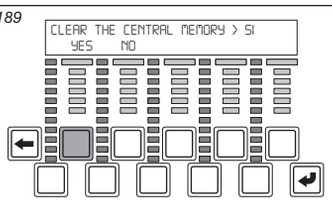
- **Premere il tasto CLEAR (fig. 187).**
- **Press ENTER ↵ to confirm.**
- *The "CLEAR" menu will appear on the display (fig. 188).*

Fig. 188



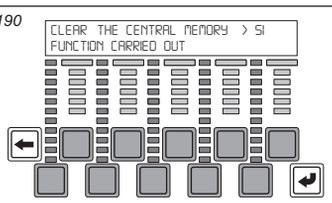
- **Press the CT (CentralTest) key (fig. 188).**
- **Press ENTER ↵ to confirm.**
- *The control unit will prompt the user for an explicit confirmation before carrying out the operation requested (fig. 189).*

Fig. 189



- **Press NO to cancel the procedure and go back to the "CLEAR" menu or press “YES” to reset the Control Unit memory (fig. 189).**
- **Press ENTER ↵ to confirm.**
  At the end of the procedure, the outcome will be displayed (fig. 190).

Fig. 190



- **Press any key (fig. 190).**
- *The Control Unit will automatically go back to the "MAINTENANCE" menu (fig. 187).*

- **Press the BACKSPACE ← key repeatedly to go back to the main screen. In any case, the Control Unit will automatically go back to the main screen 60 seconds after the pressing of the last key.**

On the rear of the CTOC Control Unit you will find two auxiliary ports, identified as CN2 and CN3, which may be used to connect auxiliary devices that enhance the functions of a CTOC system. Two types of devices may be connected:

- Personal Computer
- TeleIO

A Personal Computer allows remote control of a CTOC system. The TeleIO device allows a CTOC system to be integrated with other control and monitoring systems.

Only one device of each type may be connected to a single Control Unit.

CONNECTING THE CONTROL UNIT TO A PERSONAL COMPUTER

The CTOC Control Unit can be connected to a Personal Computer to enable remote control of the system. This may be achieved via a DIRECT connection using a dedicated serial line or via MODEM using a normal telephone line. In order for an exchange of information to take place between the Control Unit and the Personal Computer, a suitable software program must be installed in the latter. Different software programs are available for this purpose (for DOS and Windows environments). To enable the Control Unit to communicate with a Personal Computer via MODEM or a DIRECT serial connection, the user must carry out a specific programming procedure on the auxiliary port used for the connection. Only in this way will the Control Unit be able to respond to the calls of the Personal Computer linked to it and, where necessary, to generate calls of its own, autonomously or at the prompting of the Personal Computer itself, to warn of the presence of errors detected within the system.

The following events may trigger a call:

1 no luminaire configured with the Control Unit
2 presence of unreachable nodes
3 presence of communication errors
4 failed tests (battery or tube faults)
5 call request from a Personal Computer

An automatic call will be conditional on at least one of the above events occurring, such as to trigger a request, while several other conditions will govern its execution:

1 at the time a call is made to the Personal Computer, the Control Unit must be displaying the main screen or it must wait until this condition is restored if this momentarily not the case.
2 the Control Unit will make at most 5 call attempts in response to one request for a call from the PC, after which it will consider the request fulfilled.
3 between one call attempt and the next the Control Unit will allow 10 minutes to elapse if it is linked to the Personal Computer via MODEM or 1 minute in the case of a DIRECT connection.
4 after a call request has been fulfilled, either because the call has been correctly completed or because the available attempts have been used up, the Control Unit will wait 24 hours, if linked to the Personal Computer via MODEM, or 10 minutes in the case of a DIRECT connection, before making another call relative to a new detected fault.
Throughout the phase of communication between the Control Unit and Personal Computer, a suitable warning message will be shown on the Control Unit display and the local keyboard will be temporarily disabled.

CONNECTING THE CONTROL UNIT TO A TELEIO DEVICE

Connecting the CTOC Control Unit with a TeleIO device allows a CTOC system to be integrated with other control and monitoring systems.
The TeleIO device features 8 changeover contacts, 4 inputs and 4 outputs, which signal the system and CTOC Control Unit status and activities in progress and switch on the luminaires, where necessary, in the override mode. The events signalled on the 4 outputs of the TeleIO correspond to the messages displayed on the main screen of the Control Unit, i.e.:

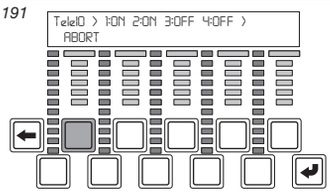
Output 1:	“POWER FAIL”
Output 2:	“FUNCTIONAL TEST IN PROGRESS”
	“AUTONOMY TEST IN PROGRESS”
Output 3:	“NO DEVICES WAS INSTALLED”
Output 4:	“FAILED TEST”
	“COMMUNICATION ERRORS”
	“ORPHAN KNOTS”
	“ERROR IN AUX CN2”
	“ERROR IN AUX CN3”

Via the 4 TeleIO inputs it is possible to switch on, in the override mode, all of the luminaires in the system divided into groups of 4 zones:

Input 1:	ZONE1,..,ZONE4
Input 2:	ZONE5,..,ZONE8
Input 3:	ZONE9,..,ZONE12
Input 4:	ZONE13,..,ZONE16

Simultaneously activating all 4 inputs will cause the luminaires in all 255 zones to switch on in the override mode. The Control Unit updates the TeleIO outputs and will process any request to switch on the luminaires in the override mode only if it is currently displaying the main screen. During the execution of automatic tests the Control Unit will not process any TeleIO requests. The TeleIO request to switch on the luminaires is signalled by the Control Unit via the display of a special screen that indicates the operation underway and the inputs that have been activated:

Fig. 191



In the luminaires ON override status, the Control Unit will only process changes in TeleIO inputs that involve switching on additional luminaires. The Control Unit can exit this status and return to the main screen in one of the following cases:

1 all 4 inputs are switched back to the rest configuration.

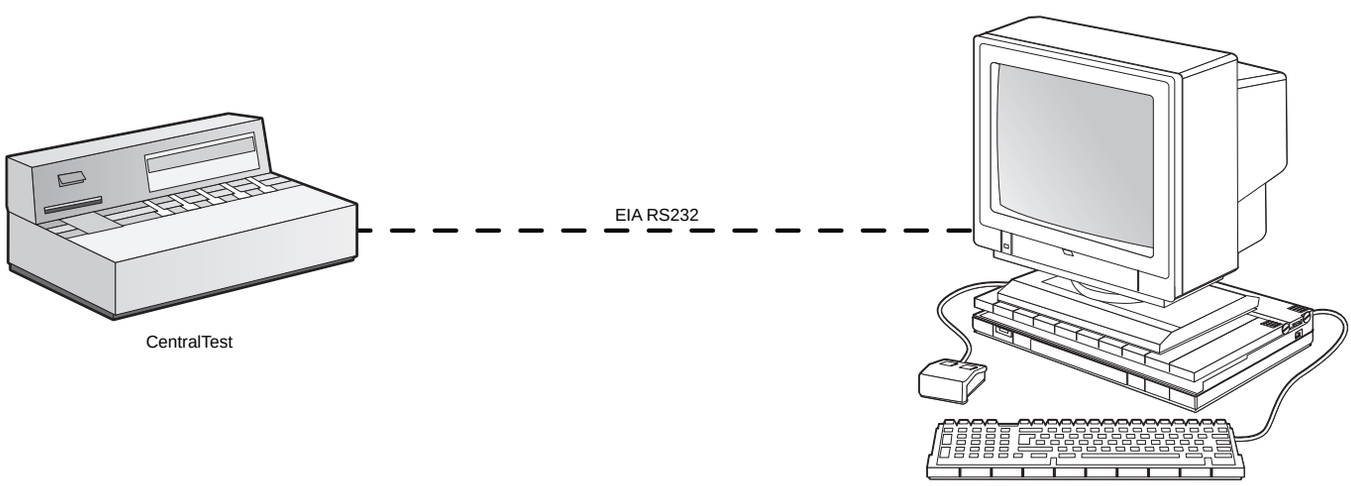
2 timeout (1 hour).

3 the procedure is manually cancelled from the Control Unit (fig. 191).

In any case, on returning to the main screen the Control Unit will not process any further requests from the TeleIO until it has sensed, at least for a few seconds, all 4 inputs to be in the rest configuration.

PROGRAMMING A DIRECT CONNECTION BETWEEN THE CONTROL UNIT AND A PERSONAL COMPUTER

A DIRECT connection can be made between the CTOC Control Unit and a Personal Computer via an RS232 serial cable plugged into both terminals, Control Unit and Personal Computer. The term Host Computer, commonly used in reference to this type of connection, implies that the Control Unit is directly connected to the Personal Computer without any devices in between.



To enable the Control Unit to communicate with a Personal Computer in a DIRECT connection, the user must carry out the corresponding programming procedure on the auxiliary port used for communication. In order for the connection to be made to a Personal Computer, the auxiliary port used must be free and neither of the two auxiliary ports must be already programmed for a DIRECT or MODEM connection. Otherwise, it will be necessary to erase the existing programming before attempting to reprogram (see instructions for erasing auxiliary port programming).

To program a DIRECT connection between the Control Unit and a Personal Computer you must:

1 specify the auxiliary port used.

2 specify the type of device to be connected, indicating the connection mode (Host Computer).

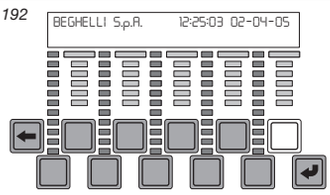
3 select the speed of data transmission (baud rate) between the Control Unit and Personal Computer.

4 assign the Control Unit an address to which the commands will be directed (a Personal Computer can supervise up to 10 Control Units connected to the same serial line, provided that each has a different address).

5 enable or disable the Automatic Call function of the Control Unit, triggered when the latter detects an error conditions within the system.

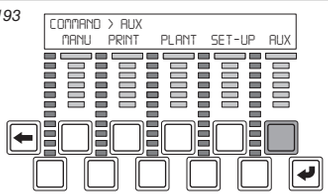
To launch the procedure for setting up a DIRECT connection between Control Unit and Personal Computer:

Fig. 192



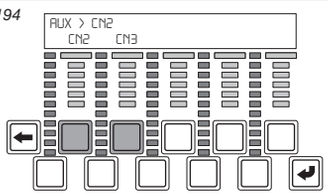
- From the main screen press any key except the one at the top right (fig. 192).
- *The 5 main menu headings will be displayed (fig. 193).*

Fig. 193



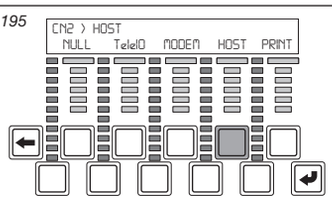
- Press the AUX key (fig. 193).
- Press ENTER ↵ to confirm.
- *The "AUX" menu will appear on the display (fig. 194).*

Fig. 194



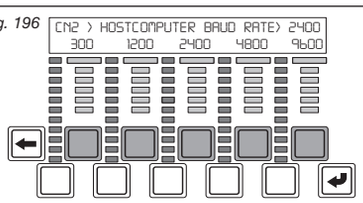
- Specify the auxiliary port used (fig. 194).
- Press ENTER ↵ to confirm.
- *A menu will appear for selecting the auxiliary port connection mode (fig. 195).*

Fig. 195



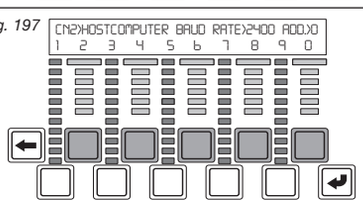
- Press the HOST key (fig. 195).
- Press ENTER ↵ to confirm.
  If the port specified is free and neither of the two serial ports is already programmed for this connection, a menu will appear for selecting the baud rate in communications with the Personal Computer (fig. 196). Otherwise it will be necessary to erase the connection of the already programmed auxiliary port (see instructions for erasing auxiliary port programming) and repeat the programming procedure.

Fig. 196



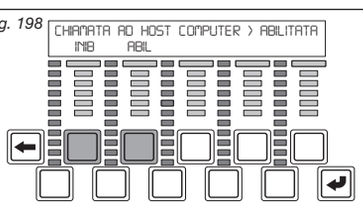
- Select the speed of data transmission (baud rate) between the Control Unit and Personal Computer (fig. 196).
- Press ENTER ↵ to confirm.

Fig. 197



- Specify the Control Unit address (0 to 9) to which the commands must be directed (default=0) (fig. 197).
- Press ENTER ↵ to confirm.
- *The Control Unit will prompt you to enable or disable automatic calls to the Personal Computer when errors are detected within the system (fig. 198).*

Fig. 198

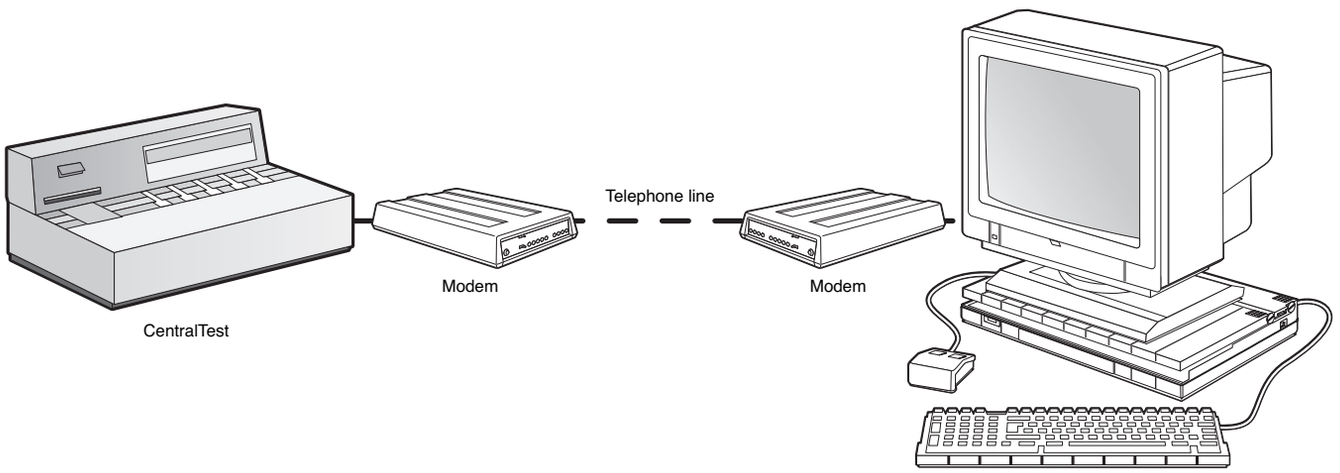


- Press "DISABLED" to disable or "ENAB" to enable the automatic call function (fig. 198).
- Press ENTER ↵ to confirm.
- *The Control Unit will automatically go back to the "AUX" menu (fig. 195).*

To check the set programming parameters, request a printout of the SET_UP (see printout of programming data).

PROGRAMMING THE CONNECTION TO A PERSONAL COMPUTER VIA MODEM

To connect the CTOC Control Unit to a remote computer via MODEM, using a normal telephone line as the data transmission medium, you must install a MODEM between each of the two terminals - Control Unit and Remote Computer - and the telephone line, as shown in the diagram:



You can use any type of MODEM device provided that:
- it is independently powered
- it has a standard DB9 or DB25 serial connector
- it is compatible with HAYES controls
- it has the capability of permanently storing the operating configuration
- the MODEM on the Control Unit side is connected with a NULL-MODEM cable

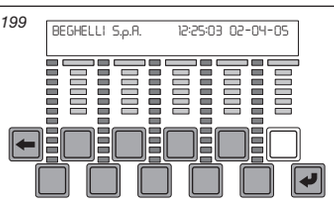
To enable the Control Unit to communicate with a Remote Computer via MODEM, you must carry out the corresponding programming procedure on the auxiliary port used for communication. In order for the connection to be made to a Personal Computer, the auxiliary port used must be free and neither of the two auxiliary ports must be already programmed for a DIRECT or MODEM connection. Otherwise, it will be necessary to erase the existing programming before attempting to reprogram (see instructions for erasing auxiliary port programming).

After connecting the MODEM to one of the two serial ports and switching it on you can proceed with the programming procedure, where you must specify:

1 the serial port used.
2 the type of device to be connected, indicating the connection mode (MODEM).
3 the MODEM data exchange speed (baud rate).
4 the phone number the Control Unit will answer to.
5 the phone number the Control Unit can call if the Automatic Call function is enabled (whereby the Control Unit will automatically make a call on detecting an error within the system).
6 whether to enable or disable automatic calls by the Control Unit in event of errors detected within the system

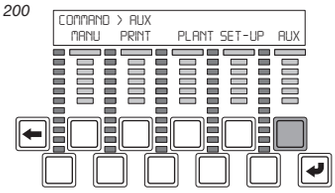
To launch the procedure for setting up a MODEM connection between Control Unit and Personal Computer:

Fig. 199



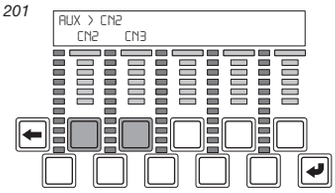
- Connect the modem to one of the two auxiliary serial ports and switch it on.
- From the main screen press any key except the one at the top right (fig. 199).
- *The 5 main menu headings will be displayed (fig. 200).*

Fig. 200



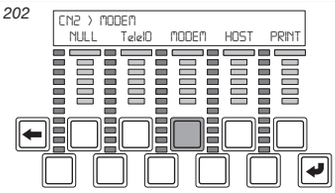
- Press the AUX key (fig. 200).
- Press ENTER ↵ to confirm.
- *The "AUX" menu will appear on the display (fig. 201).*

Fig. 201



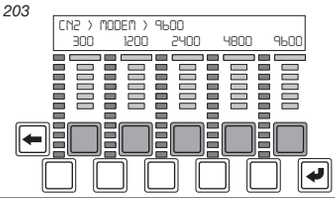
- Specify the connector the MODEM is connected to (fig. 201).
- Press ENTER ↵ to confirm.
- A menu will appear for selecting the auxiliary port connection mode (fig. 202).

Fig. 202



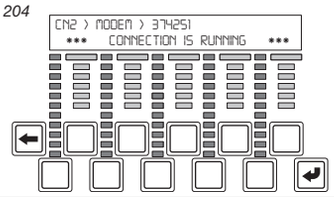
- Press the MODEM key (fig. 202).
- Press ENTER ↵ to confirm.
  If the port specified is free and neither of the two serial ports is already programmed for this connection, a menu will appear for selecting the speed of data transmission between modems (baud rate) (fig. 203). Otherwise it will be necessary to erase the connection of the already programmed auxiliary port (see instructions for erasing auxiliary port programming) and repeat the programming procedure

Fig. 203



- Select the baud rate for the connection between modems (fig. 203).
- Press ENTER ↵ to confirm.
- *The Control Unit will verify the connection between the modem and the serial port specified (fig. 204).*

Fig. 204



If the modem fails to respond the Control Unit will display an error message and go back to the "AUX" menu (fig. 201). In such a case, check whether the modem has been connected to the Control Unit, whether the specified connector is the one actually used and whether the modem is switched on; then repeat the procedure. If the connection is successful, the Control Unit will prompt the user to specify the phone number it must respond to (fig. 205 fig. 206).

- Press ">>" to move from the display of numerals to that of extended characters (fig. 205 fig. 206).

Fig. 205

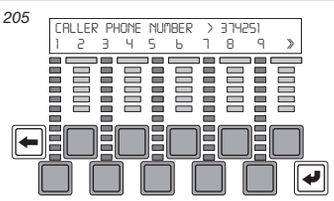
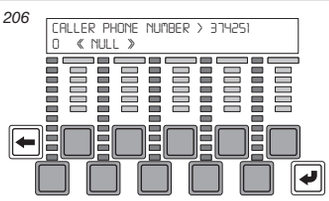


Fig. 206



- Press ENTER ↵ to confirm.

- Enter the phone number the Control Unit must call in case of malfunctioning (fig. 207 fig. 208).
- Press ">>" to move from the display of numerals to that of extended characters: "," pause, "W" wait for a dial tone to continue dialling, "T" multifrequency dialling, "P" pulse dialling (fig. 207 fig. 208).

Fig. 207

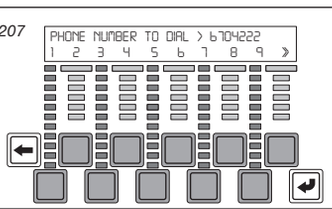
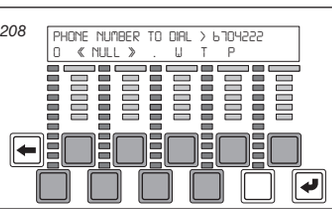
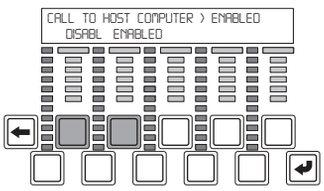


Fig. 208



- Press ENTER ↵ to confirm.
- *The Control Unit will prompt the user to enable or disable automatic calls to the Personal Computer in case of errors detected within the system (fig. 209).*

Fig. 209



- Press "DISABLED" to disable or "ENAB" to enable the automatic call function (fig. 209).
- Press ENTER ↵ to confirm.
- *The Control Unit will automatically go back to the "AUX" menu (fig. 207).*

To check the set programming parameters, request a printout of the SET_UP (see printout of programming data).

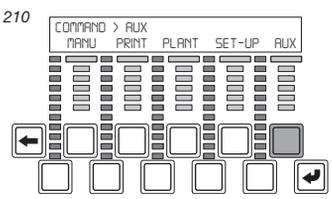
PROGRAMMING THE CONNECTION OF THE CONTROL UNIT TO A TELEIO DEVICE

Connecting the Control Unit to a TeleIO device allows a CTOC system to be integrated with other control and monitoring systems.

To enable the Control Unit to manage the connection with a TeleIO device, you must carry out a specific programming procedure on the auxiliary port used for the connection. In order for the Control Unit to be connected to a TeleIO device, the auxiliary port used must be free and neither of the two auxiliary ports must have already been programmed for this connection. Otherwise, it will be necessary to erase the existing programming before attempting to reprogram (see instructions for erasing auxiliary port programming).

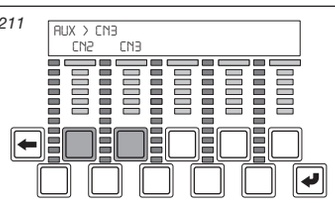
To program the connection of a TeleIO device to the Control Unit you must:
1 specify the auxiliary port used.
2 select the type of device to be connected (TeleIO).
3 launch the connection procedure

Fig. 210



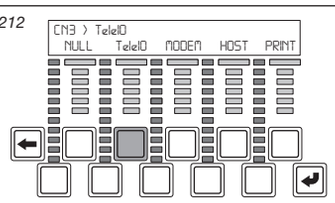
- Connect the TeleIO to one of the two auxiliary ports and switch it on.
- Press the AUX key (fig. 210).
- Press ENTER ↵ to confirm.
- *The "AUX" menu will appear on the display (fig. 211).*

Fig. 211



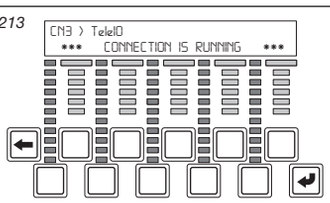
- Select the speed of data transmission (baud rate) between the Control Unit and Personal Computer (fig. 196).
- Press ENTER ↵ to confirm.

Fig. 212



- Press the TeleIO key (fig. 212).
- Press ENTER ↵ to confirm.
- *The Control Unit will verify the connection between the TeleIO device and the serial port specified (fig. 212).*

Fig. 213



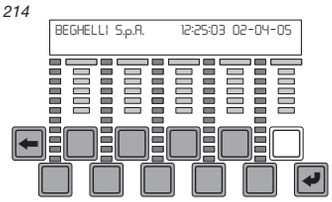
If the TeleIO fails to respond the Control Unit will display an error message and go back to the AUX menu (see fig. 212). In such a case, check whether the TeleIO is connected to the Control Unit, whether the specified connector is the one actually used and whether the TeleIO is switched on; then repeat the procedure. If the connection is successful the Control Unit will automatically go back to the "AUX" menu (fig. 211).

To check the set programming parameters, request a printout of the SET_UP (see printout of programming data).

ERASING THE PROGRAMMING ON AUXILIARY PORTS

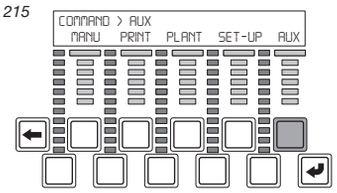
To erase the current programming of the auxiliary ports:

Fig. 214



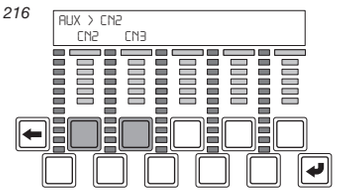
- From the main screen press any key except the one at the top right (fig. 214).
- *The 5 main menu headings will be displayed (fig. 215).*

Fig. 215



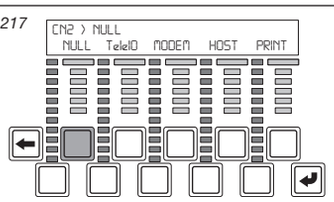
- Press the AUX key (fig. 215).
- Press ENTER ↵ to confirm.
- *The "AUX" menu will appear on the display (fig. 216).*

Fig. 216



- Specify the auxiliary port for which you want to erase the programming (fig. 216).
- Press ENTER ↵ to confirm.
- *A menu will appear for selecting the auxiliary connection mode (fig. 217).*

Fig. 217



- Press "NULL" to erase the programming of the auxiliary port specified (fig. 217).
- Press ENTER ↵ to confirm.
- *The Control Unit will go back to the "AUX" menu (fig. 216).*

PRINTER MAINTENANCE

REPLACING THE ROLL OF PAPER

When a coloured stripe appears along the edge of the paper, it means the roll should be replaced as soon as possible. To replace the roll:
- open the door on the front of the Control Unit, remove the ribbon cartridge and then the used up roll.
- thread the free end of the new roll through the slot provided, from the bottom to top, and turn the lateral feed roller until paper comes out
- pass the paper through the ribbon cartridge
- fit the ribbon cartridge back in place
- tighten the ribbon if necessary
- carry out a print test

REPLACING THE CARTRIDGE

When printed messages are no longer legible, it is time to replace the cartridge. To replace the cartridge:
- open the door on the front of the Control Unit, remove the used cartridge and the roll of paper.
- pass the paper through the replacement cartridge
- fit the ribbon cartridge back in place
- tighten the ribbon if necessary
- carry out a print test

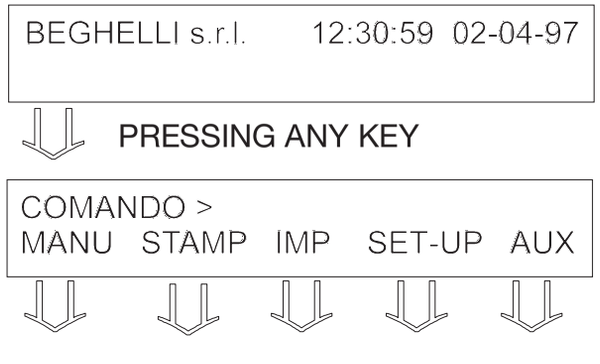
FACTORY CONFIGURATION

- Date: 01-01-95
- Time: 00:00:00
- Language: Italian
- Printout of automatic test reports: enabled
- Function Test Timer: every 28 days at 12:00 p.m. starting from 01/01/96
- Duration Test Timer: every 26 weeks at 12:00 p.m. starting from 04/01/96
- All zones enabled for testing

TECHNICAL CHARACTERISTICS

- Supply: 230V~50Hz
- All zones enabled for emergency operation
- Power supply: 220/230V, 50/60Hz
- Maximum mains current intake: 60mA
- Protection Rating: IP40
- Insulation: class II
- Operating temperature: +5 °C/40 °C
- Batteries: 6 sealed rechargeable NiCd batteries 1.2V, 1.2A
- Battery life: 4 months
- Recharging time: 24 hours
- Key-operated security switch
- Electronic control circuit for recharging and minimum voltage threshold
- Mains protection PTC
- LCD Display (2 lines x 40 characters) with display of date, time and messages to guide user
- High-precision quartz clock
- Storage of programmed functions even in the event of prolonged disconnection from power supply

Structure of CTOC Control Unit menus *(ver. 3.0)*



SETUP MENU

It contains the Control Unit parameter programming functions

- SET-UP
  - Time
  - Date
  - Language
  - Autom. printouts

MANUAL MENU

It contains the system manual control functions

- MANUAL
  - Function Test
  - Duration Test
  - Sys. shutdown
  - Clearing errors
  - Switching on of lights

AUX MENU

It contains the functions for programming auxiliary ports for remote control of the system.

- AUX
  - CN2
  - CN3
    - Null
    - TeleIO
    - Host
    - Modem

PRINT MENU

It contains the functions for printing out the system status and programming parameters

- PRINT
  - Configuration
    - System
    - Zone
  - Programming
    - System
    - Luminaire
    - Set-Up
  - Status
    - Errors
  - Paper

SYSTEM MENU

It contains the system installation, programming, editing and test functions

- SYSTEM
  - Installation
  - Programming
    - Test Timers
      - Function Test
      - Duration Test
    - Execution
      - Emergency
      - Test
    - Test Completion
      - Function Test
      - Duration Test
  - Maintenance
    - Delete luminaire
    - Move luminaire
    - Clear
      - Control Unit
      - Luminaire
    - Change Duration
    - Replacement
      - Control Unit
      - Disp.
  - Status Check
    - Configuration
    - Errors

Note:

Note:

CAUTIONARY NOTES - WARRANTY

- This unit must only be used for the purpose for which it was manufactured. Any other use is to be considered inappropriate and therefore dangerous.
- Disconnect the unit from the mains supply before carrying out cleaning or servicing.
- Contact an authorised customer service centre for the replacement of lamps, batteries , or any repairs, and insist on the use of genuine spare parts. Failure to comply with these instructions may compromise the safety of the unit.
- The product cannot be disposed as unsorted municipal waste. It must be collected separately to prevent negative environmental impacts. In accordance with the procedures of Directive 2002/96 and relevant national laws and regulations adopted pursuant to this Directive on the disposal of waste at the end of the life cycle of the product, any violation is sanctioned by law.
- Beghelli's products are subject to the applicable lows on intellectual property.
- For details regarding warranty services, contact an authorized dealer.

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